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Fig. 1. General View of Exhibition Hall (First Floor)

THE SECOND INTERNATIONAL EXHIBITION OF EUGENICS

HELD SEPTEMBER 22 TO OCTOBER 22, 1921,
IN CONNECTION WITH THE

SECOND INTERNATIONAL CONGRESS OF EUGENICS

IN THE
AMERICAN MUSEUM OF NATURAL HISTORY, NEW YORK

An account of the organization of the exhibition, the classification of the exhibits, the list of exhibitors, and a catalog and description of the exhibits

BY
HARRY H. LAUGHLIN
Chairman of the Committee on Exhibits

FORTY-SEVEN ILLUSTRATIONS

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Committee on Exhibits:

HARRY H. LAUGHLIN, Chairman
CLARK WISSLER
LAURENCE V. COLEMAN

PREFACE

During the sessions of the Eugenics Exhibition, many exhibitors and visitors expressed a desire to possess, for their respective libraries, permanent photographic and descriptive records of the material on display and under demonstration. In response to this demand, the Committee on Exhibits before dismantling the exhibition late in October, 1921, photographed all of the exhibits which could be reproduced suitably in this manner. It prepared also a history and statistical account of the exhibition, and made for preservation in permanent form, a careful description of the material shown by each of the 131 exhibitors.

It is trusted that the printing of the account and description of the exhibition, in systematic form, under one cover, will serve a useful purpose, not only to the exhibitors and the persons who are now interested in the matter, but also that it will serve an historic purpose in presenting graphically a cross-section view of eugenical science at the time of the Second Congress, and thus complement the technical papers which were presented to the Congress, and which are printed in two volumes bearing respectively the titles, Volume I, "Eugenics, Genetics, and The Family," Volume II, "Eugenics in Race and State."

It is hoped also that this compilation will be of use to the Exhibition Committee of the Third Congress, which can build upon this work in the same manner as the present Committee built upon the work of the Committee on Exhibits of the First Eugenics Congress, which first committee published its account under the title, "Catalog of Exhibits, First International Congress, London, July 24–July 30, 1912, University of London, South Kensington."

Cold Spring Harbor, L. I., N. Y.
November 1, 1922.

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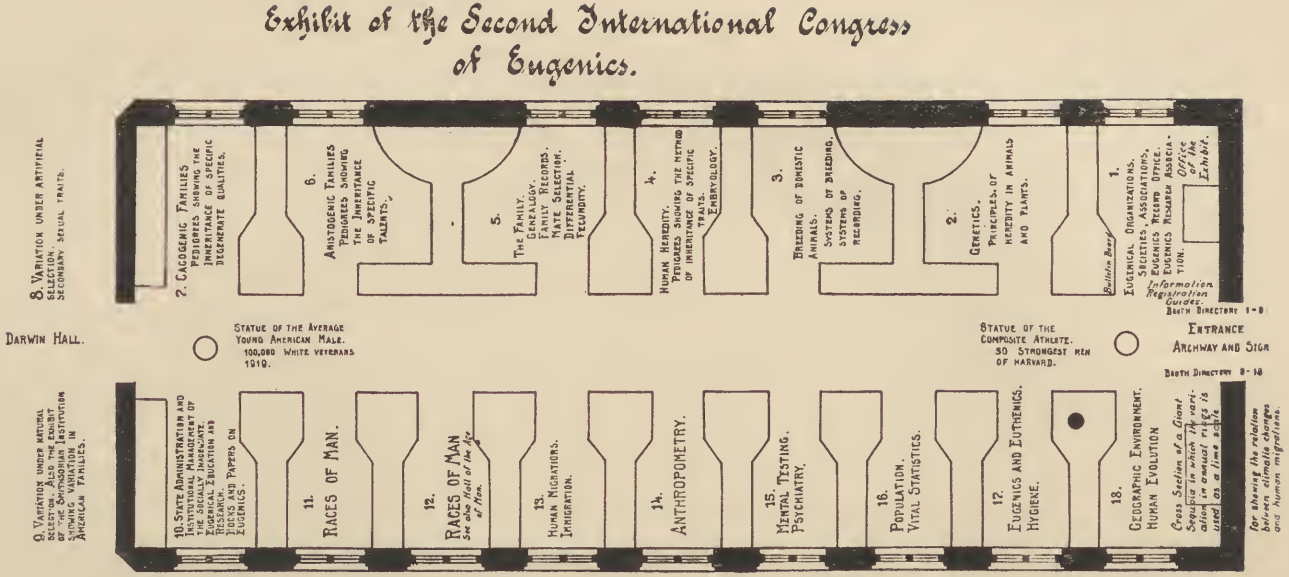


American Museum of Natural History, New York.

September 22nd - October 22nd 1921.

(Forestry Hall converted temporarily into an Eugenics Hall.)

FIG. 2. FLOOR PLAN OF EXHIBITION HALL (FIRST FLOOR)

AN ACCOUNT OF THE EUGENICS EXHIBITION HELD IN CONNECTION WITH THE SECOND INTERNATIONAL CONGRESS OF EUGENICS IN THE AMERICAN MUSEUM OF NATURAL HISTORY, NEW YORK, SEPTEMBER 22 TO OCTOBER 22, 1921

This exhibit consisted of a display of researches into the science and the practical application of eugenics and allied subjects. It was shown in two sections—first, an exhibit relating to the paleontology of man, especially prepared for the occasion by the American Museum of Natural History, in the Hall of the Age of Man on the fourth floor; second, the Special Eugenics Exhibition, in eighteen alcoves in the Forestry and Darwin Halls on the first floor.

Support. The exhibit was made possible, both by the very generous gift of $2,500 for this specific purpose, by Mrs. E. H. Harriman, founder of the Eugenics Record Office, and by the American Museum of Natural History in providing exhibition space and aid in the installation and care of exhibits.

SECTION ONE

Anthropology and Archaeology. Hall of the Age of Man. Fourth Floor

"A special exhibit was prepared by the American Museum of Natural History and was installed in the Hall of the Age of Man, which was the room where the principal meetings of the Congress were held. Most of the permanent exhibits in this Hall were removed, but there remained the synoptic exhibit for early man and his culture.

"On the walls of the hall were the newly installed paintings by Charles R. Knight, representing the fauna and other conditions that confronted man of the Old Stone Age. Two of these panels represent Neolithic and Palaeolithic man respectively. Restorations of extinct races of man are shown and compact installations presenting Man's Place among the Primates, The Most Ancient Human Races, and the Immediate Predeces-

sors of Modern Man, the Neanderthals. The wall space beneath these paintings was used for two special exhibits in anthropology: a chronological chart and a synoptic exhibit for human culture by N. C. Nelson; photographs, face casts, and charts presenting the race problem of Hawaii by Louis R. Sullivan.

"The chronology of the world's culture prepared by Mr. Nelson, Associate Curator of Archaeology in the Museum, is the first serious attempt to present the time-relations for the culture of the world as a whole.

"The Hawaiian exhibit presented the material just returned from an expedition to Hawaii, where Dr. Louis R. Sullivan, Assistant Curator in the Museum, spent many months under the auspices of the Bernice P. Bishop Museum of Honolulu. The charts and busts in the exhibit were prepared by the Bishop Museum in Hawaii as their special contribution to the Congress. The photographs and mountings were contributed by the American Museum of Natural History. Type photographs and busts were shown for pure Hawaiians, Chinese, Japanese, and Portuguese, accompanied by mixtures of the same. The charts present statistical data on the present population.

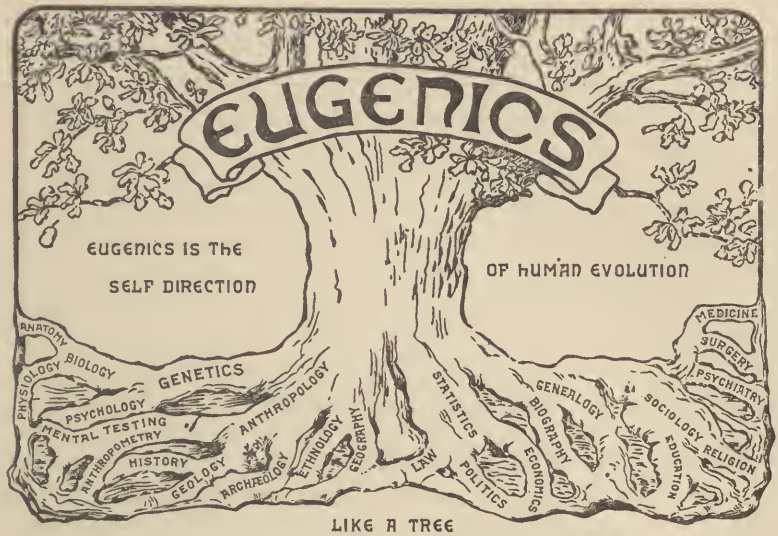
"In this Hall also special permanent exhibits, principally those showing the restoration of anthropoid skulls and heads, were shown temporarily in new positions for the purpose of coördinating and emphasizing geological history of the human species."—Clark Wissler.

SECTION TWO

Eugenics and Allied Sciences. Special Exhibition. First Floor

General Character. The second section, which was shown in the Forestry and Darwin Halls on the first floor, comprised mainly embryological and racial casts and models, photographs, pedigree charts and tables, biological family histories and collective biographies, graphical and historical charts on the character and analysis of population, material showing the principles of heredity in plants, animals and man, maps and analytical tables demonstrating racial vicissitudes, anthropometric instruments, apparatus for mental measurements, and books and scientific reprints on eugenical and genetical subjects.

Assembling the Exhibits. Exhibits were secured by corresponding with and interviewing persons, in the United States and foreign countries, who were known to be interested in eugenical subjects and to be conducting eugenical researches. It was aimed to make the exhibits relatively few in number but outstanding and specifically illustrating definite principles.



LIKE A TREE
EUGENICS DRAWS ITS MATERIALS FROM MANY SOURCES AND ORGANIZES THEM INTO AN HARMONIOUS ENTITY.

The Second International Congress of Eugenics, devoted to researches in all fields of science and practice which bear upon the improvement of racial qualities in man, convey this expression of appreciation of the generous gift of

Mrs E. H. Harriman

of New York, which made possible the exhibition of eugenical materials which were assembled and displayed, in connection with the Congress, at the American Museum of Natural History.

New York, September 1921

Henry Fairfield Osborn — *President of the Congress*

H. H. Laughlin — *Chairman of the Committee on Exhibits*

FIG. 3. COPY OF CERTIFICATE AWARDED FOR MERITORIOUS EXHIBITS

As the work developed, it was soon found that all of the available space would be occupied, and that even some of the exhibits which were offered, and which were quite worthy of showing, would have to be represented by sample display.

Exhibitors. The exhibits were shown by scientific investigators in the fields of eugenics, genetics, statistics, psychology, anthropology and other fields of investigation which bear upon the biological factors in family and racial fortunes. College and university professors, investigators in scientific institutions, physicians and field workers in institutions for the socially inadequate, statisticians and research departments of the great life insurance companies, scholars and authors of independent means, publishing houses, and state and federal governmental departments furnished the main body of the exhibits. There were in all one hundred and thirty-one exhibitors.

Geographical Distribution of Exhibitors. Geographically, the exhibits came from twenty-two states, the District of Columbia and sixteen foreign countries. By number of exhibits, states and countries were represented as follows: Alabama 1, Colorado 1, Connecticut 3, Illinois 4, Indiana 4, Iowa 2, Kansas 1, Kentucky 1, Maryland 3, Massachusetts 12, Michigan 2, Missouri 2, Nebraska 1, New Hampshire 3, New Jersey 6, New York 44, Ohio 4, Oregon 1, Pennsylvania 1, Rhode Island 2, Texas 2, Wisconsin 1, District of Columbia 10, Australia 2, Belgium 1, Canada 1, China 1, Cuba 1, England 3, France 1, Holland 1, India 1, Italy 2, Japan 1, Mexico 1, New Zealand 1, Norway 1, Peru 1, Switzerland 1.

Outline of Material Sought. In assembling the exhibits the following announcement and explanatory outline was sent to prospective exhibitors:

SUGGESTIONS RELATIVE TO EUGENICS EXHIBITS

It is desired to make the exhibits of this Congress relatively few in number but striking in nature.

All exhibits must pertain directly to eugenical matters, that is, they must have a bearing upon the problems of race betterment. Exhibitors are urged to keep in mind Galton's definition that "Eugenics is the study of the agencies under social control which may improve or impair the racial qualities of future generations, either mentally or physically."

While the exhibits must be able to withstand the test of professional scrutiny, still they should be of a nature which the man of ordinary intelligence and education, but without special scientific training, may readily comprehend and appreciate. Provision will be made for exhibiting displays of highly technical work, but the popular aspect will be given the preference.

Charts, maps, pictures, models and scientific apparatus are considered proper means for displaying and demonstrating eugenical facts and principles, but any other kind of display material which any particular exhibitor cares to offer will be most carefully considered.

In general the ground covered is as follows:

A. Human heredity.
B. Human migration.
C. Mate selection.
D. Differential fecundity.
E. Differential survival.
F. The evolution of man.
G. Social control of eugenical factors.

Stated more specifically, exhibits of materials collected and of work done under the following headings will be especially welcome:

1. Human pedigrees which trace the transmission of specific physical, mental and temperamental qualities.
2. Studies in human migration.
3. Studies in race mixture, accompanied with pictures of individuals and families, and pedigree explanations.
4. The relation between natural hereditary qualities and national greatness.
5. Eugenics and over-population.
6. The evolution of man.
7. The social control of mate selection in the interests of producing more talented offspring.
8. Specific efforts to cut off the supply of hereditary degenerates.
9. The classification and geographical distribution of particular types of marriage laws and customs.
10. Registration of births, marriages, divorces and deaths.
11. The eugenical aspect of illegitimacy.
12. Geographical and racial distribution of specific types of constitutional talent and defect.
13. The measure and change of racial elements and natural qualities in selected portions of the population.
14. Statistics on fecundity and longevity.
15. The mathematical and theoretical aspects of eugenical problems.
16. Schemes for recording family history records and biographical material.
17. Anthropometric standards and apparatus for measuring physical traits.
18. Psychological standards and apparatus for diagnosing and measuring mental and temperamental qualities.
19. The legal aspect of eugenical activities such as marriage laws, immigration regulation, deportation, segregation, sexual sterilization, eugenical registration, state aid to maternity, differential tax against sterility and the like.
20. Eugenical surveys which seek to identify and to index all members of a given population which possesses certain socially desirable or undesirable natural qualities.
21. Eugenical (not sex hygiene) education.
22. The history of race betterment activities.
23. Books, journals, pamphlets, scientific reprints and other publications, relating to eugenics.

Investigators in eugenics and allied sciences are invited to communicate to the Committee on Exhibits a description of such exhibits as the particular investigator may care to offer for display at the forthcoming Eugenical Congress. All such descriptions and offers

should be in the hands of the Committee by June 1, 1921. After that date prompt responses will be made to all such offers with the view to coördinating and systematizing exhibits. The work of preparing, shipping and installing the exhibits can then proceed in the most effective manner.

All exhibits should be in the hands of the Committee not later than September 1, 1921.

Address all correspondence in relation to exhibits to Harry H. Laughlin, Chairman of Committee on Exhibits, Cold Spring Harbor, Long Island, New York.

Exhibition Space and Installation. The Forestry Hall on the first floor of the American Museum of Natural History consists of a central corridor or concourse and sixteen alcoves set off by large glass cases eight feet high, within which cases the permanent forestry exhibits are installed. Temporarily the exterior surface of these cases was used for exhibition walls. For this purpose the bottom two feet were covered with grey cloth and the top six feet by vehisote panels. The running length of these six foot panels was 1040 feet. Besides this space, the movable standard screens of the Museum were placed within the booths, thus adding approximately one-third to the wall space made available by the continuous panels. Down the center of the Hall were placed a series of the standard glass exhibition cases of the Museum. These cases extended also into the adjacent sections of Darwin Hall. All available space was covered by material especially assembled for this exhibit, and in a few instances, selection had to be made within particular displays offered on account of lack of space.

Return of Exhibits. All material and packing cases were properly labeled upon arrival, and at the termination of the exhibit, the displays were repacked and in every case safely returned to their respective exhibitors, or otherwise disposed of in accordance with the exhibitor's instructions. In no case was exhibit material lost, nor did any exhibitor express dissatisfaction with the handling of his material.

Classification of Exhibits

Group I. Heredity

Class 1. *General Genetics.* Exhibits of genetical material (or pictures of such) in two or three generations.

Class 2. *Any other Exhibits of General Genetics.*

Class 3. *Human Heredity.*

3a. Pedigree charts, or tables, showing family distribution of particular traits—physical, mental and temperamental.

3b. Charts and specimens illustrating linkage or crossing over in mammalian or human pedigrees.

3c. Production of hereditary defects in man or mammals (alcohol, etc.).

3d. Any other aspect of heredity.

Class 4. *Physiology of Reproduction.*

4a. Ovulation, union of the gametes, physiological sterility.

4b. Development of the embryo; origin of embryological defects; prenatal deaths.

4c. Number of young at a birth—twinning, etc.

4d. Sex ratios.

4e. All other exhibits on heredity and reproduction.

GROUP II. THE HUMAN FAMILY

Class 5. *Fecundity,* in different strains, families and social classes.

5a. Statistics on fecundity and longevity of races, nations, families or social groups.

5b. Changes in ideals respecting size of family; birth control; consequences of unrestricted fecundity.

5c. General laws of growth of population; over-population.

5d. Social control over fecundity of strains; sterilization laws and consequences; taxation of celibates; state aid to fecundity of the most valuable classes.

5e. Dying out of families.

5f. All other exhibits on differential fecundity.

Class 6. *The Differential Survival of Various Strains.*

6a. Relative morbidity of and defect rate in families, racial stocks or social groups; racial susceptibility or racial immunity; also of the sexes; and of different order of birth.

6b. Relative mortality in families or racial stocks, or social groups. Also of the sexes and of different order of birth.

6c. Selective influences of epidemics and wars upon races or social groups.

6d. Survival of the unfit, and its consequences.

6e. All other exhibits on differential survival.

Class 7. *Mate Selection.*

7a. Illustrations of the consequences of excellent mate selection—aristogenic families.

7b. Illustrations of consequences of poor mate selection—cacogenic families.

7c. Illegitimacy and its eugenical bearings.

7d. Consanguineous mating and consequences (man and other organisms).

7e. Social control over mate selection—especially religious or communistic experiment and their results; mating laws and customs; segregation.

7f. All other exhibits on mate selection.

Class 8. *All Other Exhibits on the Human Family.*

GROUP III. THE FACTOR OF RACE

Class 9. *Evolution of Man.*

Class 10. *Photographs of Human Racial Types.*

Class 11. *Maps of Past and Present Distribution of Races.*

Class 12. *Race in Relation to History.*

Class 13. *Facts of Race Migrations and Intermingling.*

13a. Early interracial mixtures.

13b. Modern migrations and their consequences; immigration to the United States.

13c. Regulation of immigration; immigration laws.

13d. Miscegenation and its consequences; characteristics of hybrids.

13e. Photographs and models showing results of modern racial mixtures.

13f. Geographical and racial distribution of specific types of constitutional talent and defect.

13g. Other data on the racial factor.

GROUP IV. APPLIED EUGENICS

Class 15. *Human Constitutional Differences; and Applications.*

15a. Measurements of differences in physique, intelligence, instincts and temperament. Apparatus and results.

15b. Human differences in relation to physical, mental and religious education.

15c. Constitutional differences in relation to society; social values.

15d. Education in eugenics.

Class 16. *Records of Racial Facts.*

16a. Registration *by race*—of births, marriages, divorces, deaths; physical traits, diseases and defects; psychological and temperamental differences.

16b. Census records of family and race; the census as an aid to genealogy.

16c. Any other racial records.

Class 17. *Eugenical Surveys.*

Class 18. Eugenics in relation to treatment of those under state care (feebleminded, insane, etc.).

Class 19. National hereditary qualities and national greatness; the rise and fall of nations dependent on the changes in the germ-plasm.

Class 20. Eugenics and genealogy.

Class 21. Any other exhibits of applied eugenics.

GROUP V. SPECIAL INSTITUTIONS AND METHODS: PERSONAL

Class 22. Institutions of eugenics.

Class 23. Societies of eugenics and organizations for race betterment.

Class 24. Methods of collecting and recording eugenical data.

Class 25. Books, journals, pamphlets and other publications relating to eugenics.

Class 26. Biographical and personal data; letters and photographs of eugenicists.

Opening and Attendance. The exhibit was ready on the date announced and was thrown open to the public on the first day of the Congress, September 22, 1921. Special invitation was issued to members of the Congress and their friends, and to persons particularly interested in the inborn nature and fortunes of races and families. Admission was free. During the month, while the exhibit was open to the public, 821 persons signed the register to indicate their especial interest in eugenical research, and a desire to promote the purpose of the Congress and the exhibit. No exact record was kept of the total number of visitors, but Dr. Frederic A. Lucas, Scientific Director of the American Museum of Natural History, estimates that between 5,000 and 10,000 persons attended the exhibit during the month. Attendants and guides from the Eugenics Record Office were constantly on hand to explain the displays. Special mention should be made also for the courtesy and efficiency of the Museum staff in aiding, each in his particular province, the work of this exhibit.

The Eighteen Booths or Alcoves. A description of the general character of the exhibits within the several booths. For practical exhibition purposes,

each of the several booths was numbered, named and given accompanying explanatory paragraphs,—all posted conspicuously on a placard at the entrance of the particular booth, as follows:

Booth 1. Eugenical Organization. Eugenics is a new science organized from factors contributed by may other lines of scientific endeavor. It is based primarily upon the facts of heredity, and is properly defined as "The science of the improvement of the human race by better breeding" (Davenport), or as "The study of those agencies under social control which may improve or impair the qualities of future generations either mentally or physically" (Galton), or "The conscious (as opposed to the instinctive) self-direction of human evolution."

In this country such agencies as the Eugenics Record Office and the Eugenics Research Association are devoted exclusively to promoting eugenical interests. There are a'so many colleges and universities which give courses in the new science, and many local societies and state institutions which are conducting first-hand eugenical investigations.

Note: On the tables in this booth there are provided papers and pamphlets on eugenics. Persons who are especially interested are given the opportunity to receive blank schedules prepared by the Eugenics Record Office for the purpose of guiding investigators in securing and tabulating family history data on the biological or inborn trait basis.

Also, this booth contains the bulletin board for announcing current and forthcoming features of the Congress, and especially for posting the time and place of special demonstrations by exhibitors; the register for recording the names, addresses and special interests of persons especially concerned with eugenics; it is also the office of the exhibit and the headquarters of the guides and attendants.

Booth 2. Genetics and Heredity. Genetics is the science of reproduction and heredity in plants, animals and man. Genetics is also an important foundation factor in eugenics or the improvement of the human race through a knowledge of heredity and its application to selection and fecundity. The determination of a principle of inheritance in one of the three groups of organisms throws much light upon genetical behavior in the other two.

Ultimately the human species must be highly specialized in race and hereditary family traits, but in no case must the soundness of stock and high fecundity be sacrificed

Practical eugenics works in two directions. First, for cacogenic control which seeks to raise the level of inborn human values by cutting off the descent lines of those individuals who are so meagerly or defectively endowed by nature that their offspring are unable to care for themselves and consequently entail a drag upon the more effective members of society.

Second, the aristogenic or constructive activities of eugenics seek to raise the general level of inborn human values by securing fit matings and higher fertility among families most highly talented by nature in body, mind and temperament.

Booth 3. Domestic Breeds. The breeders or improvers of domestic plants and animals apply the principles of heredity in a practical manner. In order to do this intelligently, they must understand the laws of genetics, must see to it that fit matings are made, that only those individuals most splendidly endowed by nature, in body and reaction, are permitted to reproduce, and that, among the more desired strains, high fecundity is secured.

Man can learn from his own experience with the domestic animals and plants. The breeder's records enable him to direct the forces of racial evolution along definite and pre-

selected lines. Human eugenics is not stock breeding, but its racial progress depends upon such social laws and customs as will direct mate selection along lines which will produce offspring of the most highly talented and fertile nature.

Practical breeders insist on authentic and permanent pedigree records. Man, subject to the same laws of natural inheritance as plants and animals, has not yet put into practice a universal system of maintaining trait or performance records of all members of the family tree. The keeping of trait-records is a necessary step which must precede practical eugenics.

Booth 4. Human Heredity. Hereditary qualities, mental, physical and temperamental, are the materials out of which traces are made. Variation in these qualities permits selection in the direction of inborn family or racial ideals. It is essential that the manner of inheritance of specific human traits be determined by accurate family history study and careful pedigree analysis.

Booth 5. The Family, Mate Selection, Fecundity. The family organization, and the laws and customs governing human reproduction, constitute the agency by which racial destiny is now determined. Mate selection in man is governed by courtship and marriage and is, of course, one of the greatest of all eugenical factors. Wise matings and high fecundity mean racial progress. Unfit matings mean racial degeneracy. At present, factors of mate selection, through courtship, are charming personal qualities, high social position, wealth and the like. If the race is to improve eugenically, inborn family qualities must, ultimately, through education, become important factors in courtship, and consequently in mate selection. It is eugenically important that each family maintain a permanent record of family traits.

Booth 6. Aristogenic Families. As evidence of eugenics, we find in some families a predominance of mental, physical and moral personal qualities of a highly herditary nature and of the greatest individual and social value. Such families are called aristogenic. A democracy, in common with the science of eugenics, recognizes the aristocracy of personal ability, physical, mental and moral. A democratic nation, in order to live, must foster good blood and hereditary talent, just as assiduously as an undemocratic country fosters special privilege.

Booth 8. Variation Under Domestication. In his "Plants and Animals under Domestication," Darwin demonstrated conclusively the practical effectiveness of artificial selection in establishing new varieties. The permanent Museum exhibits of this booth illustrate this truth.

Booth 9. Variation Under Natural Isolation. Even under a uniform environmental condition, members of a uniform species, when permanently isolated, tend to vary in diverse directions. Thus the limits of opportunities for mating, in bisexual species, are the limits of permanent race-uniformity.

In isolated American communities, man (both pre-Columbian and post-Columbian) has mutated along unique lines and has developed into new varieties.

Booth 10. Institutions, Administration, Eugenical Education. Many states and institutions are now recognizing the necessity of working out practical eugenical programs. Many custodial institutions (for the feebleminded, insane, criminalistic and the like) are making family history studies of their inmates, and many states are denying parenthood to individuals whose handicaps are based upon hereditary defects, and, as a radical measure, fifteen states have enacted laws providing for sexual sterilization of certain types of defectives.

Eugenical education is depended upon to develop, in the next generation, a general appreciation of eugenical principles, which will result in more highly essential laws governing marriage and reproduction, and will influence mate selection in the direction of higher eugenical fitness.

Booth 11. Races of Man. Humanity is composed of many races differing widely in physical, mental and moral qualities. The history of the origin and development of races and the analysis of the family distribution of personal qualities furnish material for the determination of the hereditary nature of specific traits.

Booth 12. Races of Man. There must always be highly diversified races and highly specialized families within races. In order to survive, it is necessary that a given race or a given strain have some of the common foundational human elements, such as stamina and high fecundity, but in addition to these elementary qualities, racial and family specialization is essential in human progress.

Booth 13. Human Migration, Immigration. Whenever two races come in contact for a long period of time, history proves that race mixture follows. Consequently the eugenical importance of human migration cannot be over-estimated. It is one of the four or five elementary factors which determine racial fortunes.

Booth 14. Anthropometry. In the scientific study of human heredity, it is necessary first to have an accurate standard for measuring specific traits. When these traits are physical ones, eugenics draws upon the science of anthropometry for its standards and technique.

Booth 15. Mental Testing, Psychiatry. The recent development of the science of measuring mental qualities and physiological and temperamental reactions, has added much to the efficiency of eugenical studies. The accurate tracing of psychological qualities from one generation to another must rest on a quantitative basis.

Psychiatry, the study of mental disorders, has contributed much to the proper understanding of the mental mechanism and the human behavior.

Booth 16. Population, Vital Statistics. The statistical study of population by sex, age, race, occupation, literacy, wealth and individual talent reveals the end results of the working out of eugenical factors. The study of population and vital statistics constitute the bookkeeping aspect of eugenics.

Booth 17. Eugenics and Euthenics. Eugenics means well born. It refers to improvement of the human race by better breeding. The whole group of external factors which affect human development and which may influence indirectly the course of heredity, are called euthenics. Thus if eugenics stands for hereditary factors, euthenics stands for the total of environmental forces. Both good heredity and good environment are absolutely essential to racial welfare.

Booth 18. Environment, Human Evolution. With the change of environment, especially in climate, races of man have been stimulated to migrate from less favorable to more favorable regions. These migrations have influenced very greatly the evolution of mankind, largely through the struggle for existence, new opportunities for mate selection, and the influence of the complex of environment upon differential fecundity and survival.

Description of Exhibits, Alphabetically Arranged

1. *Exhibitor:* American Genetjc Association, Scientific Society devoted to plant breeding, animal breeding and eugenics, Washington, D. C.

Exhibits: Copies of its monthly publication *The Journal of Heredity.*

2. *Exhibitor:* American Geographical Society, Broadway at 156th Street, New York City, N. Y.

Exhibits: Maps, reprints of articles and monographs dealing with distribution of population, migration, and zones of civilization.

3. *Exhibitor:* American Hampshire Swine Record Association, 409 Wisconsin Avenue, Peoria, Illinois.

Exhibits: One set of colored posters.

4. *Exhibitor:* American Jersey Cattle Club, Registration of Pure Bred Jersey Cattle, 324 West 23d Street, New York, N. Y.

Exhibits: Pedigrees and photographs of specimen cattle. In this exhibit was a pedigree of a Jersey Bull which sold for $65,000. It showed the extent of inbreeding practiced by cattle breeders, in that this bull carried $52\frac{13}{16}$ of the combined blood of two of his great great great grandparents, secured by the almost consistent mating of half-brothers and half-sisters for many generations. Only 45 animals appear in the six generations back for this animal, as against the normal number of 126 ancestors in six generations.

Photographs showed the improvement in type as a result of several generations of intelligent breeding.

5. *Exhibitor:* American Karakul Sheep Company, Breeders and developers of Persian Lamb Fur Sheep, Fayetteville, N. Y.

Exhibits: Chart showing Persian lamb fur sheep and lambs bred in America.

6. *Exhibitor:* American Milk Goat Record Association, Compilers and Preservers of pedigrees of Milk Goats, Vincennes, Ind.

Exhibits: First ten volumes printed.

7. *Exhibitor:* American Rambouillet Sheep Breeders' Association, Marysville, Ohio.

Exhibits: 21 Publications of the Association.

8. *Exhibitor:* The American Red Cross, Washington, D. C.

Exhibits: Five posters.

9. *Exhibitor:* American Short Horn Breeders' Association, 13 Dexter Park Avenue, Chicago, Illinois.

Exhibits: One herd book, pedigree lists and sample registry certificates.

10. *Exhibitor*: American Social Hygiene Association, 370 Seventh Avenue, New York, N. Y.

Exhibits: Ten illustrative panels dealing with eugenics and social hygiene.

11. *Exhibitor:* American Statistical Association, Kent Hall, Columbia University, New York, N. Y.

Exhibits: One quarterly publication. One chart comparing the death rates of white and colored races. One chart showing gradual decrease of deaths from alcoholism in New York City. Years given—1916, 1917, 1918, 1919, 1920. Two pamphlets, "Forty-five years of United States Naval Morbidity."

12. *Exhibitor:* Prof. W. S. Anderson, Professor of Genetics, University of Kentucky, Lexington, Ky.

Exhibits: Photographs of horses and of upgraded sheep. Peter the Great is the most successful sire of the standard-bred breeding horse, having to his credit over 60 2:10 trotters. His son, Peter Volo, made world trotting records for two-year-olds, three-year-olds, and four-year-olds and is now a successful sire.

Fair Play is a successful sire, but his most valuable get has been Man O'War who, as a three-year-old, holds five world records against horses of all ages, marking him as the outstanding race horse produced by the breed to-day. He is to-day worth more money than any other live animal of any breed.

Photographs of sheep were shown to illustrate the value of good blood in improving common stock. The same flock of scrub ewes on the Kentucky Experiment Station farm were bred one year to a scrub male and a flock of scrub lambs produced. The next year the same flock of scrub ewes was bred to a Rambouillet registered ram and lambs from this cross formed a contract to the lambs produced by a scrub sire out of the same dams. The lambs by the pure bred sire were worth two to three times the get of the scrub sire.

13. *Exhibitor:* Prof. E. B. Babcock, Professor of Genetics, University of California, Berkeley, Calif.

Exhibits: Text-book "Genetics in Relation to Agriculture" by Ernest B. Babcock, Professor of Genetics, University of California and Roy Elwood Clausen, Assistant Professor of Genetics, University of California. Published by the McGraw-Hill Book Company, New York, 1918.

14. *Exhibitor:* Dr. Bird T. Baldwin, Iowa Child Welfare Research Station, State University of Iowa, Iowa City, Iowa.

Exhibits: Studies of growth and development of children. Twenty-five groups of curves, showing correlation of weight, height, etc. with several other physical capacities; some graphs showing development in infants, and still others showing individual increase in different measurements of strength. Six bulletins issued by the Iowa Child Welfare Research Station on studies done in their laboratory.

15. *Exhibitor:* Prof. B. F. Beck, Santisstrasse 4, St. Gallen, Switzerland.

Exhibits: (a) Nineteen photographs illustrating nineteen folk-types of primitive Switzerland (Plate 27, Vol. II). (b) Twenty-one photographs illustrating twenty-one folk-types from the Rhone Valley. (c) Six treatises and two charts concerning inheritance of mental disease, dementia praecox, epilepsy, suicide, paralysis, etc.

16. *Exhibitor:* Dr. Alexander Graham Bell, Volta Bureau, Washington, D. C. (see also Volta Bureau).

Exhibits: Six stereograms (Plate 4, Vol. I) showing the relation between age of fathers at death, age of mothers at death and longevity of offspring. (1) Persons who died young (under 20), (2) Persons who died 20–40, (3) Persons who died 40–60, (4) Persons who died 60–80, (5) Persons who died 80–100, (6) Average age at death. The greatest percentage of those who had long-lived parents fell in class 5.

17. *Exhibitor:* Dr. A. F. Blakeslee, Resident Investigator in Plant Genetics, Carnegie Institution of Washington, Cold Spring Harbor, L. I.

Exhibits: Charts and diagrams dealing with sex in Mucors and genetics in Datura. This exhibit comprised ten charts and several test tube cultures of mucors. It demonstrated the following features:

Sex in mucors: a single chart with photographs of living cultures, diagrams and descriptive text to illustrate sexual differentiation into dioecious and hermaphroditic types and into isogamic and heterogamic types; also the sexual relations between the opposite sexes of the same species, and between the opposite sexes of different species.

Mutation in mucors: a single chart with living cultures and photographs to show the type form of *Mucor genevensis* and several mutants to which it has given rise, some of them soon reverting to the parent type, while others remaining constant since 1913.

A chemical method of distinguishing genetic types of yellow cones in the Black-eyed Susan (*Rudbeckia hirta*): a single chart in colors to illustrate inheritance of the two types of yellow cones. One type turns black, while the other type turns red in strong KOH.

An apparent case of non-Mendelian inheritance in *Datura* due to disease: a single chart showing by photographs the morphological peculiarities in the flower, fruit and leaves,

when the *Datura* plant is infected by a disease which is readily transmitted by grafting but not by inoculation.

Variations in Jimson Weed (Datura Stramonium) caused by differences in the number of the chromosomes: a series of 6 charts giving text, chromosomal diagrams and photographs of seedlings, mature plants, leaves, flowers and capsules of normal diploids, tetraploids, and the simple trisomic mutants—Globe, Poinsettia, and Cocklebur.

18. *Exhibitor:* Bureau of the Census, Washington, D. C.

Exhibits: (a) One large map of the United States showing cities with a population of over 30,000.

(b) Chart of the United States and the proportion in cities.

(c) Chart of the birth rates and death rates in their relation to age distribution. Chart of death rates of various races in New York State, 1910.

(d) One statistical chart (colors, 4 by 5 feet). Divorces 1913. Comparison of the most important nations of the world, proving the greater number of divorces occurring in Japan and the United States; the lowest rate represented by Scotland, Italy and England.

(e) One statistical diagram (colors, 5 by 5 feet). Annual Number of Marriages and Divorces in the United States 1887–1906 and 1918, showing doubled increase of both marriages and divorces within that period.

(f) Statistical diagram (colors, 6 by 6 feet). Comparative Fecundity of different Racial Stocks in the United States. Predominance of Foreign Stock (Plate 34, Vol. II).

(g) One statistical chart (colors, 5 by 5 feet). Average number of children ever born to mothers of 1919 and average number of these children living. Comparison by country of birth of mother showing predominance of foreign born.

(h) Two charts: (1) Curves showing death rates from important causes of death, United States registration, 1900–1919. (2) Death rates United States and foreign countries 1900–1920.

(i) Two charts: (1) Comparative view of 25 of the principal causes of death for the registration area (exclusive Hawaii) for the year 1918. (2) Comparative view of 25 of the principal causes of death for the registration area (exclusive Hawaii) for the year 1919.

(j) One statistical chart, showing ratio of white and colored insane in hospitals in the United States. Comparison of North and South.

(k) Eight colored charts representing the following population statistics: Foreign-born population by principle countries of birth 1850–1920; Foreign-born white population 1920; Continental United States—population per square mile 1790–1920; Increase of population in the United States and the principal countries of Europe 1800–1920; Infant mortality by country of birth of mother in the registration area 1919; Per cent of increase in total population and in white and negro population 1780–1820; Foreign white stock by principal countries of origin 1910. (Plate 40 and 41, Vol. II).

(l) Six United States maps with states colored to represent increase of death registration area, years given—1880, 1890, 1900, 1915, 1921, and birth registration area 1921.

(m) Chart to show per cent of population of each state born in principle foreign countries, 1920.

(n) Large chart with six maps of United States showing percentage from: (1) Germany, (2) Russia and Finland, (3) Austria and Hungary, (4) Ireland, (5) Italy, (6) Norway, Sweden and Denmark.

(o) Large chart illustrating immigration into the United States from European Countries 1820–1920 (Plate 39, Vol. II).

(p) Four large maps of the United States, with the states colored so as to show: (1) Percentage in white population of native white parentage, 1920. (2) Foreign or mixed parentage, 1920. (3) Foreign white and foreign or mixed parentage combined, 1920. (4) Foreign white, 1920.

19. *Exhibitor:* Bureau of Social Hygiene, Penn Terminal Building, 370 Seventh Avenue, New York, N. Y.

Exhibits: Chart, books and pamphlets. Chart showing the heredity of the descendants of six families residing in Dutchess County, New York.

Books and pamphlets published by the Bureau of Social Hygiene, Inc., as follows: "Prostitution in Europe," by Flexner; "American Police Systems," by Fosdick; "European Police System," by Fosdick; "Commercialized Prostitution in New York City," by Kneeland; "A Study of Women Delinquents in New York State," by Fernald, Hays and Dawley; "Laws Relating to Sex Morality in New York City," by Spingarn; "Prostitution in the United States," by Woolston.

Pamphlets: "Commercialized Prostitution in New York City—A Comparison Beween 1912, 1915 and 1916;" "Commericalized Prostitution in New York City—A Comparison Between 1912 and 1915;" "Commericalized Prostitution in New York City—A Comparison Between 1912, 1915, 1916 and 1917;" "The Problem of Venereal Disease in its Relation to Penal Institutions," by Edith R. Spaulding, M.D.; "Crime in America and the Police," by Fosdick; "An Emotional Crisis," by Edith R. Spaulding, M.D.; "Some Institutional Problems in Dealing with Psychopathic Delinquents," by Katharine Bement Davis; "Physical States of Criminal Women," by Albert S. Guibord, M.D.

20. *Exhibitor:* Dr. Esther F. Byrnes, Teacher of Biology and Physiology, Girls' High School, 193 Jefferson Avenue, Brooklyn, N. Y.

Exhibits: Composite photographs showing racial types of pupils of the Girls' High School. The exhibit from the Girls' High School, Brooklyn, N. Y., was intended to show the racial and national make-up of an average group of 150 unsorted pupils in one of the High Schools in New York City.

In the spring of 1921 a questionnaire was sent to each room in the school asking for the following information:

(1) What is the number of foreign born girls in the room and in what country was each born.

(2) What is the number of American born girls in the room whose father or mother was foreign born, and give the foreign country in which either or each was born.

(3) Give the number of American born girls and the countries to which they trace their ancestry (the answer not included in 2). Indians only regarded as of American ancestry.

The answers to the questionnaire are summarized in the following table:

	(1)	(2)	(3)
Africa	—	—	34
America	—	—	14
Austria	7	303	53
Denmark	—	—	4
England	18	104	203
France	—	27	66
Germany	4	153	194
Holland	—	3	27

	(1)	(2)	(3)
Hungary	1	31	8
Ireland	2	99	147
Italy	9	99	19
Norway	—	2	3
Poland	7	63	4
Rumania	4	53	7
Russia	75	849	137
Scotland	2	16	43
Spain	4	—	7
Sweden	5	17	8
Switzerland	—	1	6
Syria	1	—	—
Turkey	1	—	—
Wales	—	—	5
Totals	140	1820	989

The pupils on register in the school numbered 2200. The table shows Russia contributing more than any other country. Nearly all of the Russians are Jews. Austria stands next to Russia. Most of the Austrians are Jews. Germany stands third on the list and contributes Jews as well as Nordics. England and Ireland stand fourth and fifth respectively, with Italy sixth. The influence of the remaining European countries is negligible in determining the personnel of the school.

The composite photographs show the types of the several different races and nationalities.

Altogether the data show the foreign make-up of the school and the types contributing their blood and traditions to the future American.

21. *Exhibitor:* Dr. Myrtelle M. Canavan, Pathologist to the Massachusetts Department of Mental Diseases, 74 Fenwood Road, Boston, Mass.

Exhibits: Enlarged photographs of 50 feebleminded brains and 50 criminal brains (Plate 22, Vol. I.). The exhibit from the laboratories of the Massachusetts State Psychiatric Institute consisted of enlarged photographs of the superior surface of (a) 50 feebleminded brains, and (b) 50 criminals.

The first 10 of these feebleminded brains have been intensively studied and published in monograph form in the Memoir Series from the American Academy of Arts and Sciences; Vol. XIV, No. II, May 1918, as Waverly Researches in the Pathology of the Feebleminded (Research Series, Cases I–X), by Walter E. Fernald, E. E. Southard and Annie E. Taft, and the second 10 of the same 50 exhibited appears as the continuation of this clinico-anatomical study as Vol. XIV, No. III, November 1921, Memoirs of the American Academy of Arts and Sciences, Waverley Researches in the Pathology of the Feebleminded (Research Series XI–XX) by Fernald, Southard, Canavan, Raeder and Taft.

The aim of the first monograph was to discover which types of feeblemindedness were preventable, if brain complexity was measurable, and if hydrocephalic dilatation of ventricles contributed to outbursts of excitement. The second monograph indicates the answer of the question of matching testable mind with measurable brain and points toward one type of preventable feeblemindedness, e.g., syphilitic.

The pictures exhibited will form the basis of the completed monograph on Feebleminded-ness. Attached to each picture was a brief explanatory chart giving the brain weight,

the mental and chronological ages and such facts as were known concerning the heredity, which rarely exonerated the family, and the brains themselves presented anomalies of fundamental character—lack of furrows—interlocking of hemispheres, stenciling of surface pattern, or marked microcephalia.

Hydrocephalous enlargement also was a marked though infrequent finding, and evidence of old meningitis could be seen.

The brains (b) of 50 insane criminals also formed a portion of the exhibit and presented striking differences from the feebleminded in that no microcephalic nor hydrocephalic were present in a similar series of 50. The most striking feature was that their brains were, for the most part, either very long or very round, with well developed pattern, probably indicating that the criminal is potentially well endowed but improperly uses his endowment. Most of the crimes were minor ones—breaking and entering, drunkenness, vagrancy, now and then a major crime of murder. It was striking, perhaps fortunate, that the majority of these men were unmarried.

22. *Exhibitor:* Dr. Chester L. Carlisle, Director Oregon State Survey, Chief, Neuro-Psychiatric Section, U. S. Veterans' Bureau, Leiter Bldg., Chicago, Ill.

Exhibits: Two charts showing percentage findings of Oregon State Survey.

The Oregon State Survey of Mental Defect, Delinquency and Dependency, conducted by the University of Oregon, under the direction of the United States Public Health Service, was unique in that it was the first survey in mental hygiene ever carried on without special state appropriations, the work being accomplished by the voluntary aid of thousands of citizens chiefly recruited from the professional, educational and official groups in each village, city and county of the state. The Survey may be divided into two main divisions:

(1) A survey of the community at large. The findings in this division show the number of socially inadequate persons of all classes in the community, not including school children in the schools. One chart of this exhibit deals exclusively with such community findings and points out the type of mental, physical or social disorder which rendered the individual inadequate. Broadly speaking, such types are essentially the insane, the mentally deficient without psychosis, the socially inadequate (frequently mentally abnormal) delinquent type, and the socially inadequate (especially the mentally defective) dependent type.

(2) The second division of the Oregon State Survey comprised an analysis as to why children actually in school were over-age for their grades and are thus considered to be retarded in school work in comparison with normal age expectations. The chart setting forth the major findings of this school survey shows the percentage of over-age for grade school children who are actually mentally dull or subnormal. The chart demonstrates that a child who is definitely over-age for grade has a specific reason for such retardation; and that taken as a whole, apparently one-third of such retarded children are considered by their teachers, or others who have been able to observe them closely, as showing a definite degree of mental dulling. This survey brought out that purely physical disorders as such, were not responsible for as large a percentage of school retardation as was formerly thought to be the case. Causal factors relating to parental inadequacy loom large. Parents carrying recessive unit characters which make for organ weakness in offspring, produce children who show their first social inadequacy from a practical standpoint as over-age for grade pupils in school. Conversely, socially inadequate adults have almost without exception, a history of having been over-age for grade in school. Prophylaxis in mental hygiene finds a wonderful field in reviewing the possibilities to be found in the school which are molding the minds and habits of the coming generation.

23. *Exhibitor:* Central Association for the Care of the Mentally Defective, 24, Buckingham Palace Road, London, S. W. 1, England.

Exhibits: Copies of: (a) Studies in Mental Inefficiency. (b) C. A. M. D. Sixth Report. (c) Work of Local Association for Mental Defectives. (d) Conference on Mental Deficiency.

24. *Exhibitor:* Chester White Record Association, Rochester, Indiana.

Exhibits: Two magazines and a roll of photographs. Two volumes of the Chester White Swine Record.

25. *Exhibitor:* Child Health Organization, 370 Seventh Avenue, New York, N. Y.

Exhibits: (a) Three large posters of organization. (b) Four collections of posters purporting to prenatal and infant care and health advice. (c) Folding bulletin with the society publications, including primers and stories designed for juvenile readers. (d) Poster with "Happy's Calendar" and a health game for children.

26. *Exhibitor:* Children's Bureau, U. S. Department of Labor, 20th and D Streets, N. W., Washington, D. C.

Exhibits: Charts and publications. The Children's Bureau of the United States Department of Labor was represented by a series of charts and publications on maternal and infant mortality, infant and child hygiene, children in industry, and children in need of special care (Plate 21, Vol. I).

27. *Exhibitor:* Dr. Edward D. Churchill, Surgical Interne, Massachusetts General Hospital, Boston, Mass.

Exhibits: The Family History in Surgical Records. Sixteen significant family histories, selected from a series collected during a year's service as interne in clinical surgery at the Massachusetts General Hospital, were submitted in the form of the original notes and charts. They were shown not for their intrinsic worth, but to illustrate the type of material for the study of human heredity which is available in a large hospital, and to emphasize the value of a carefully taken family history in case records. The charts shown included hemophilia, diabetes, hernia, carcinoma, syndactylism and other diseases.

28. *Exhibitor:* Commissioner of Indian Affairs, Department of the Interior, Washington, D. C.

Exhibits: (a) One chart—Comparative Columns Showing Indian population of the United States by degree of Blood.

(b) Two panels with pictures and descriptions "How the Indians helped to win the War."

(c) Eight panels with pictures depicting Indian life, homes, customs, achievements.

(d) One map showing the location of Indian Reservations in the United States.

(e) One map showing distribution of Indians in United States by degree of blood.

(f) One chart—curves showing birth and death rates of Indians.

(g) One chart—curves showing rates of Indian marriages between Indians and Whites, between Indians by tribal custom, between Indians by legal procedure.

(h) One chart—Organization of the Indian Office U. S.

(i) One map of United States, Territories and Insular Possessions showing extent of Public Surveys, National Parks, Monuments, Reservations, etc. (8 by 10 feet).

(j) Set of Lantern Slides.

(k) Articles of Indian Home Industry: Three baskets made by Pima Indians. One Peace Pipe carved by hand from soft stone. One beaded tobacco pouch. One pair of dumb bells made by Indian boy. One model of primitive Indian perambulator. One ceremonial coat richly beaded. One Navajo blanket.

29. *Exhibitor:* Commonwealth Bureau of Census and Statistics, "The Rialto," Collins Street, Melbourne, Australia.

Exhibits: Book: "Mathematical Theory of Population."

30. *Exhibitor:* Prof. Edwin G. Conklin, Princeton University, Princeton, N. J.

Exhibits: Books: (1) "Heredity and Environment." (2) "Direction of Human Evolution."

31. *Exhibitor:* The Continental Dorset Club, Sheep Registry Association, Mechanicsburg, Ohio.

Exhibits: Pictures and pamphlets relative to sheep breeding.

32. *Exhibitor:* Dr. Henry A. Cotton, New Jersey State Hospital, Trenton, N. J.

Exhibits: Pathogenic material, drawings and models, showing the relation between local infections and mental disorders.

33. *Exhibitor:* Dr. Charles B. Davenport, Cold Spring Harbor, Long Island, N. Y.

Exhibits: (1) Chinese translation of Record of Family Traits. (2) Letter from Francis Darwin enclosing manuscript of Charles Darwin. (3) Letter from Francis Galton.

34. *Exhibitor:* Miss Jane Davenport, Cold Spring Harbor, Long Island, N. Y.

Exhibit: Statuette of the average American white soldier. (Plate 32, Vol. II).

35. *Exhibitor:* Department of Educational Psychology, Teachers College, Columbia University, New York, N. Y.

Exhibits: Intelligence test and scales.

36. *Exhibitor:* Dodd, Mead & Company, Book publishers, 449 Fourth Avenue, New York, N. Y.

Exhibits: One book: "The Eugenic Prospect—National and Racial," by C. W. Saleeby, M. D., F. R. S. E., F. Z. S. In this volume the author, who abandoned medical practice in 1904 to follow Francis Galton, the founder of modern eugenics, gives the result of his studies of personal, national and racial health. Our scientific knowledge, especially of food and drink, has greatly advanced since the Armistice; vital statistics, and especially the quality of the birth rate, have shown grave tendencies. Dr. Saleeby, as delegate to certain international congresses concerned with public health in 1919 and 1920 took the opportunity to make wide observations in sixteen countries, the results of which are given a prominent place in the present work.

37. *Exhibitor:* Dr. Julius Drachsler, Smith College, Northampton, Mass.

Exhibits: Charts showing inter-marriage among various nationalities in New York City. (Plate 26, Vol II).

38. *Exhibitor:* Doubleday, Page & Co., Garden City, Long Island, N. Y.

Exhibits: Books: "My Larger Education."

39. *Exhibitor:* Dr. Knight Dunlap, Professor of Experimental Psychology, The Johns Hopkins University, Baltimore, Md.

Exhibits: One book: "Personal Beauty and Racial Betterment." A brief attempt to show that the characteristics which are commonly called details of beauty, are signs of stock characteristics of value to the race, and that selection for personal beauty is one of the chief means of improving the race physically and mentally.

40. *Exhibitor:* Dr. Gustavus A. Eisen, Professor of Biology and Archaeologist, 707 Fifth Avenue, New York, N. Y.

Exhibits: Three photogravures of sculptured portraits of the First Century, A. D. These three portrait figures are reproduced in photogravure from original photographs, magnified about fifteen to eighteen diameters—the original heads being about one centi-

meter high. The original figures are sculptures carved in silver, not chased or stamped, found as decorations on a large silver cup, which, on account of its form, proportions and decorations, can be dated with certainty to the middle of the first century A. D. when vessels of this form were in use. After that century no similar vessels were made, all possessing a different and characteristic form. On the cup in question there are in all twelve well preserved figures, all made with the same exquisite skill and technic. One of the personages is distinctly a Greek, but all the others are Jewish. As all the figures are absolutely distinct from each other and exhibit personal characteristics of trait, mental and moral characters, and one or two a distinct educated mien, it is obvious that we have before us personal portraits of surprising quality and character, quite superior to any portraits, painted or sculptured, so far known from the first century A. D. These portraits cannot represent types. None are idealized, but all, on the contrary, reproduce with fidelity, it seems, personal characteristics of body and mind, nay, even defects. For the study of Jewish personalities in the early part of the Roman Empire, these twelve representations are absolutely unique as no similar portraits, executed with such art, are previously known. The object on which they are found as part of the decoration, is a cup of silver, about 0.19 cm. by 0.15 cm. It was found at Antioch in Syria in 1910, and is now in New York.

41. *Exhibitor:* Dr. A. H. Estabrook, Eugenics Record Office, Cold Spring Harbor, Long Island, N. Y.

Exhibits: Charts dealing with the Jukes, Ishmaels, Nams, The New Harmony Movement (Plates 18, 19 and 20, Vol. I). This exhibit comprised four sets of charts. Three of these sets referred to cacogenic groups which the exhibitor had studied, the other, the story of the New Harmony, Indiana, Experiment in Communism.

The Tribe of Ishmael, an aggregation of paupers, criminals and wanderers in Indiana and neighboring states, is pictured in the next set of charts. The Tribe is numerous, at least 10,000 in number.

The New Harmony experiment in communism, the subject of the last set of charts of this exhibit, was carried on in Indiana during the first twenty-five years of the nineteenth century. A group of religious enthusiasts from Wurtemburg, Germany, about one thousand in number, under the leadership of a George Rapp, carried on a community, where work and goods were in common and the religious bond held them together. This community was very successful materially and the people worked hard building the new town in a country at that time a wilderness. They were contented and had a much higher standard of living than their neighbors of the wilds. Robert Owen, of England, the manufacturer, bought the community property from the Rappites to carry his "New Moral World" plan and his scheme for the bettering of the conditions of the working classes and all society through free education for every one and common ownership of all property and general division of labor. His community lasted a little less than two years, the failure being ascribed to various causes. There were shown pictures of the five large community houses built for men and women to live in groups; the brick and wooden dwellings all erected on the same plan to indicate the equality of all; the big stone church—all the foregoing erected by the Rappites. Other pictures show the community under Owen's direction. Photographs or reproductions of paintings of the members of the Owen family and other prominent men of the town then, and also a sketch of the town as it is to-day, quiet and complacent with its memories of olden days, nestling along the Wabash River in the midst of the rich farming land of Posey County.

42. *Exhibitor:* Eugenics Education Society, 11, Lincoln's Inn Fields, London, W. C. 2, England.

Exhibits: Charts, posters and publications: (1) Set of the *Eugenics Review*, Vol. I–XIII (incomplete). (2) Set of publications of the Society. (3) Charts showing (a) inheritance of dramatic and musical ability. (Plate 5, Vol. I). (b) inheritance of defect. (c) Mendelian heredity with dominance. (d) Mendelian heredity. Theory of gametic purity. (e) Pedigree of the Caesars. (Plate 17, Vol. I).

The *Eugenics Review* is the quarterly publication of the Eugenics Education Society, London. It has served during the period of its existence (1) to put forward, with a minimum of technical language, the current state of knowledge in respect to heredity, as studied by the Mendelian and by the Biometrical method. (2) For the statement and discussion of the general principles involved in questions of race betterment, such as historical evidence of deterioration by adverse selection, discussions of the effects of race mixtures, etc. (3) For the discussion of individual opinions on the relation of other racial questions, marriage laws, divorce regulations, etc., with eugenics.

The charts are designed to illustrate a few clear and unmistakable cases of the repetition of a single congenital trait, or groups of traits, in particular families. They should not be read as implying that the trait in question is believed to be inherited as a single Mendelian factor, but as illustrations of the importance of heredity in general in determining individual characters.

43. *Exhibitor:* Eugenics Record Office, Cold Spring Harbor, Long Island, N. Y.

Exhibits: The Eugenics Record Office, Cold Spring Harbor, Long Island, N. Y., showed the following:

Booth 1:

1. Photograph of Eugenics Record Office.
2. Map of United States showing location of field workers.
3. All the bulletins, forms and schedules published by the office.
4. Cloth chart—Definition of the word 'Eugenics' by Sir Francis Galton.
5. Chart showing the relation of Eugenics to other sciences, drawing its material from Genetics, Biography, Genealogy, History, Anthropology, Statistics, etc.
6. Chart—How to read a pedigree chart, key to symbols and signs.
7. Chart—Simple diagrammatic explanation of the phenomena of heredity.
8. Portraits of famous Eugenicists: Francis Galton, the founder of Eugenics, Gregor Johann Mendel, Alexander Graham Bell, President of the Second International Congress of Eugenics, Professor V. Tschermak, Hugo de Vries, and others.

Booth 2:

9. Cloth chart—Eugenical Classification of the Human Stock, giving two groups: (Plate 25, Vol II).
   (a) The eugenically fit from sterling inheritance, the representatives of intellect and strength, and the
   (b) Eugenically unfit, the socially inadequate persons.
10. Two charts and mechanism illustrating the linear geography of the human germplasm. Human traits which have been shown to follow definite rules of inheritance.

    Seven charts with 155 listed traits.
    (1) Blending—6 traits.
    (2) Traits which show dominance in F_1 and segregation in F_2—63 traits.

(3) Sex-linked traits—15 traits.
(4) Probably Mendelian, but inheritance imperfect or uncertain—16 traits.
(5) Clearly hereditary, but rules of inheritance uncertain—55 traits.
(6) Associated traits (possibly linkage)—6 traits.

11. Human Heredity (Tables and machines).
    (a) Chart illustrating mechanism for showing the segregation and recombination of genes in linkage (i.e. lying in the same chromosome) and in independence (i.e. lying in different chromosomes).
    (b) The cross-over in gametogenesis in F_1. Two charts of mechanism showing the relation between the somatic appearance of the double recessive in F_2 and the linear distance between the loci for the genes of their respective positive allelomorphs.
    "Cross-over" machine No. 2. Two charts of mechanism showing how the somatic linkage ratio in F_2 is modified by "crossing over" in gametogenesis in F_1.
    (c) Systems of breeding.
        1. Pure-Sire method. Chart of mechanism showing resultant Mendelian ratios.
    (d) Chart showing apparatus for illustrating the segregation and recombination of genetic units.
12. Norms of physical growth of children by race and sex (22 charts of curves).
13. Cloth chart—Actual pedigree of cataract, illustrating the manner of transmission of dominant trait.
14. Cloth chart—Actual pedigree of albinism, showing inheritance of trait through five generations.
15. Cloth chart—Hypothetical pedigree consonant with the known principles of heredity, illustrating how good blood may become contaminated and good strains may arise from bad.

Booth 3:

16. Cloth charts—Actual pedigrees of cacogenic families, showing inheritance of insanity, epilepsy, criminalism, alcoholism, etc.
17. Five illustrations of Darwin's experiment in "Reversion" in fowls, showing ancestral stock (Junglefowl male and female) and offspring (male and female hybrids).
18. Two charts describing mechanism for illustrating the manner of inheritance of coat-pigment in shorthorn cattle.
19. Cloth chart (4 by 10 feet)—Mendelian theory of heredity; inheritance of recessive and dominant traits proved by observations in mice.
20. Cloth chart (3 by 1½ feet)—Correlation between color of the skin and form of the hair.
21. Cloth chart (3 by 12 feet)—Diagram to illustrate the Mendelian Inheritance Color in Andalusian Fowl.

Booth 4:

22. The Pure-Sire Method of Race Assimilation in America (2 charts and bulletin).
    (1) Two families in Spanish America, showing various crosses and resultant mixture.
    (2) One family in Spanish American and one in Jamaica, showing various crosses and consequent mixture.

23. Family Differences in Hereditary Susceptibility to Manic-Depressive Insanity (1 chart).
24. Inheritance of the Order of Succession in Development of the Carpal Bones. From the work of Dr. Prior, Lexington Ky. (Plate 3, Vol 1).
25. Harelip and Cleft Palate (2 charts) (Plate 7, Vol. I).
26. Inheritance of Specific Iso-Agglutinins in Human Blood (3 charts). (Plate 9, Vol. I). By Dr. F. L. Reichert of Johns Hopkins Hospital.
    (1) Table of different types of mating in forty families, showing distinct hereditary segregation of the specific iso-agglutinins in human blood.
    (2) Diagram showing Moss' classification of iso-agglutinating action of human blood sera into four groups.
    (3) Pedigree of inheritance of specific iso-agglutinins in human blood. The Epicanthus. Table of percentage of European children of different ages showing the persistence of epicanthus. It normally disappears at an early age (By Dr. F. L. Reichert).
27. Two diagrams:
    (1) Ancestral influence in the human male, based upon (a) average, (b) range and (c) chance in the contribution of chromosomes to the F_1 zygote.
    (2) Ancestral influence in the human female, based upon (a) average, (b) range and (c) chance in the contribution of chromosomes to the F_1 zygote.
28. Chart showing mechanism for illustrating the manner of inheritance of black skin-pigment in man. It shows that pigment is due to two separable genes in each gamete and that the potentiality of each gene finds measurable somatic expression, regardless of other genes.

Booth 5:

29. Pedigree chart of John Burroughs' Family (Plate 16, Vol. I).

Booth 6:

30. Harrison Family (Public Service). Nine generations in one family traced, presenting individuals holding public office in each generation.
31. Fragment of Dwight Family (inherited scholarship). This family has been charted because of its great number of educators and individuals interested in higher education (2 large cloth charts).
32. A Famous Family of American Geniuses. Seven generations are recorded in this family displaying mechanical skill and artistic temperament (large cloth chart).
33. Nine charts (2 by 2½ feet) illustrating the rise and fall of literature, fine arts, science, etc., from the early Greek period to the eighteenth century. (a) and (b) Poets; (c) Dramatists; (d) Scientists; (e) Great Leaders; (f) Speculative Philosophers, (g) Painters; (h) Architects; (i) Sculptors (From Mrs. John Martin).
34. Ten pedigree charts showing inheritance of Genius and Talent in American Families.
    (a) The Perry Family of Naval Officers.
    (b) The Jefferson Family of Actors.
    (c) The Hitchcock Family of Educators.

(d) The Wolcott Family furnishing Governors of Connecticut.
(e) The Hutchinson Family of Musicians.
(f) The Dodge-Phelps-Stokes Family of Statesmen, Merchants and Philanthropists.
(g) The Morgan Family of Capitalists.
(h) Fragment of the Sherman Family of Legislators.
(i) The Agassiz Family of Scientists.
(j) The Hopkins Family of Educators.

35. Cloth pedigree chart (6 by 8 feet)—The Sherman Family; example of a family producing Governors, U. S. Senators, Lawyers and Soldiers.

Booth 7:

36. Means proposed for cutting off the supply of human defectives and degenerates (large printed cloth chart with outline of ten proposed means and a brief discussion).

37–48. 12 pedigree charts showing inheritance of special traits.

49. Map of the United States. Eugenical sterilization in the United States, showing states having sterilization laws, with data concerning these laws (Plate 43, Vol. II).

Booth 10:

50. Chart showing the relation of the United States Federal Government to Social Inadequacy, 1921.

Booth 11:

51. Racial types in the population of the United States. 22 maps colored so as to show the percentage of different racial types in the United States; one map showing gain or loss by interstate migration and one map showing general trend of interstate migration.

52. Three maps showing distribution of eye color (clear blue and dark brown) in the United States. (Demobilization 1919.)

53. Three maps showing distribution of hair color (flaxen, red and dark brown) in the United States. (Demobilization 1919.)

54. One map showing the distribution of the Indian population of the United States (1920).

55. Composite Photographs. (Plate 15, Vol. I.) Thirty-one composite photographs of various groups, including street car conductors and college groups. A very striking resemblance is shown in the composites of 47 members of Mt. Holyoke, 47 members of Harvard Annex and 38 members of Smith. These were made in 1887–1888 shortly after Sir Francis Galton proposed the use of composites in the study of facial types. (By the late Henry P. Bowditch.)

56. Carriers of the Germ-plasm of the Future American Population. Recent immigrants at Ellis Island. Sixty-one large photographs (each having front and profile views) of immigrants taken at Ellis Island, including many racial types.

Booth 14:

57. Average dimensions of eight races (Demobilization data, 1919) as to: (1) Sitting Height; (2) Chest circumference; (3) Public arch; and (4) Waist. Relative dimensions of eight races (Demobilization 1919) as to: (1) Span; (2) Sternal notch; (3) Sitting height; (4) Pubic height. Eight races con-

considered are—Polish, German, French, Italian, English, Hebrew, Scotch and Irish.

Booth 15:

58. Chart—Endocrinopathic Inheritance. Pedigree chart showing the endocrinopathic deviations through successive generations of an original biparental disturbance.

Booth 16:

59. Growth of the United States Population by Immigration and Increase in Native Stock (13 maps and diagrams) by decades from 1790 to 1920 (Plates 38, Vol. II).

60. Two Charts—

(1) Declining birth rate among Mayflower descendants. Charts with two curves to show decreasing fecundity in all descendants and in the Brewster family.

(2) Approaching extinction of Mayflower descendants (Plate 24, Vol. I). Curve to show that if decreased fecundity continues, in 300 years all surviving descendants could be put back in Mayflower without overcrowding.

61. Forecasting the Growth of Nations (four curves on two charts) (Plate 31, Vol. II).

(1) Growth of population in United States.

(2) Curve representing France's population, confirms the theory.

(3) Growth of populaton in Serbia.

(4) Curve showing the growth of a colony of fruit flies imprisoned in a bottle. (Work of Prof. Raymond Pearl of Baltimore, Md.)

62. Chart—Comparison for Alabama of percentages of white and negroes having tuberculosis, syphilis, gonococcus infection, neurasthenia, otitis media, varicose veins, hernia, pes planus, and underweight, taken from examinations at some camp.

44. *Exhibitor:* Dr. J. Walter Fewkes, Chief, Bureau of American Ethnology, Smithsonian Institution, Washington, D. C.

Exhibits: Annual Reports and Bulletins of the Bureau of American Ethnology.

45. *Exhibitor:* Mr. Charles F. Fish, South Swansea, Mass.

Exhibits: Photographs of North American Indians. The full-blooded American Indian is fast becoming a thing of the past. Negro and white crosses have been so numerous that the full-blooded Indians are becoming fewer every year, and these, for the most part, are gradually losing the distinguishing features of their particular tribe. After the great round-up of the seventies, most of the Indians were located on reservations—part of them being some distance from their original camping grounds. This had a marked effect on most of the Indians. The high ideals, courage and bravery so characteristic of them gave way to broken spirited public wards, either relying upon the government for support or attempting to live by the unnatural methods of the white man. Such government action was quite necessary, but nevertheless it had a marked effect on the Indians as a race. In order to study the distinguishing types of the various tribes, one must go back to the time when, with the tribe as a unit, they roamed free and independent.

The exhibit of typical types of North American Indians is made up principally of photographs. The photographs were mostly taken from forty to sixty years ago and include the leading and most noted chiefs of the different tribes of the Northern and

Southern Indians. They offer facial studies and dress, also the opportunity to compare statures. Never again will the Indian return to his original condition, and any further observation must be made from the living survivors of the old days or from photographs which we now have, as it is growing harder each year to obtain likenesses showing the independent spirit of the old days when they roamed the plains in freedom.

46. *Exhibitor:* Dr. C. H. Forsyth, Assistant Professor of Mathematics, Dartmouth College, Hanover, N. H.

Exhibits: Graphic charts relative to the Trend of Longevity in the United States. The scheme of constructing abridged mortality tables, explained in the Registrar-General's Report (British) for 1914, was employed, but the work was modified in accordance with results presented by the exhibitor in the October, 1919, issue of the Bulletin of the American Mathematical Society to construct eighteen abridged mortality tables based upon the federal population and mortality statistics for the various classifications of the population of the United States for the three years 1890, 1900 and 1910 of the seven states (Connecticut, Massachusetts, New Hampshire, New Jersey, New York, Rhode Island and Vermont) which were the only states which were registration states throughout the two decades 1890–1910, except for the year 1900, when the statistics for Vermont were necessarily omitted because of the faulty form in which the mortality statistics were published.

The exhibit then gives the most important results taken from these mortality tables with the purpose of showing the probable trend of longevity in the United States. No claims are made for any great accuracy in the numerical results themselves since all ordinary statistical data of this kind are apt to be somewhat faulty and especially since each mortality table is constructed from statistical data for a single year and must reflect the peculiarities of that year. The final results of all the tables, however, check sufficiently well to warrant considerable confidence in the general trend exhibited. As far as we can find, these tables give the first estimates of the longevity of the various groups of population covered by the federal statistics.

47. *Exhibitor:* Dr. Thomas R. Garth, Adjunct Professor of Psychology, University of Texas, Austin, Texas.

Exhibits: Curves showing Racial Differences in Mental Fatigue (Plates 33, Vol II.) Groups of White, Indian and Negro children were engaged continuously in a more or less mental task, i.e., adding one place numbers on sheets already printed for the purpose. Records were therefore made on sheets arranged in tablets; two minutes were given for working on each sheet. The younger subjects worked 28 minutes; the older subjects worked 42 minutes. The younger subjects were students from third and fourth grades of public and United States Indian schools and the older subjects were taken from seventh and eighth grades of same schools.

In both columns attempted and columns accurate, the Indians worked with less falling away in efficiency toward the end than either the whites or the negroes, and the whites excelled the negroes in this respect.

The curves shown herewith are expressed in terms of average per cents of total work of the individuals of a sub-group. By taking the average per cent of work done in the first six minutes and bringing it into relation with average work done in last six minutes by a sub-group, it was shown that in the lower grades, or the younger groups, in attempts the Indians gained 3.25 per cent, whites lost 3.00 per cent and negroes lost 12.10 per cent; in accurates the Indians lost 8.40 per cent, whites lost 17.60 per cent and negroes lost 27.20 per cent. In the upper grades it was thus: Attempts, Indians gained 2.0 per cent, whites lost 4.00 per cent, and negroes lost 4.7 per cent; accurates, Indians lost 1.30 per cent, whites lost 10.20 per cent, and negroes lost 30.30 per cent.

This and other handling of the data (See *Journal of App. Psy.*, Vol. IV, pp. 235–244, and Vol. V, pp. 14–25) indicate that the Indians, who were of the Plains and Forest Indian tribes, tend to resist the onset of tendency to fall away in efficiency, or "mental fatigue" more successfully than first the whites and then the negroes. It is not known what other Indian tribes would do, who are not the Plains and Forest Indian stock.

48. *Exhibitor:* Dr. John H. Gerould, Dartmouth College, Hanover, N. H.

Exhibits: Heredity in Pierid butterflies.

Colias philodice

The exhibit showed two hereditary variations in caterpillar skin-color, olive and blue-green, each of which is directly correlated with a corresponding eye color in the adult butterfly.

A butterfly with olive-green eyes produces olive-green caterpillars. This color is recessive to the normal yellow-green eye-color and caterpillar-color. The recessive olive mutation not only affects eye-color but also gives an orange hue to the wing scales of the butterfly. The under side of the hind wings and the tips of the fore wings, parts most directly exposed during pupal development to the action of the blood, are distinctly orange in this normally yellow species. The blood (haemolymph), however, is not visibly olive or orange. It is of the normal yellow-green color.

The second mutation, however, is a blue-green variation in blood-color, recessive to yellow-green. The butterfly has blue-green eyes, blue green blood, lays pure white (not cream-white) eggs, producing conspicuous blue-green caterpillars, which lack the pink-yellow lateral stigmatal line. That yellow is entirely left out of the caterpillar was proved by the fact that certain hymenopterous parasites that had fed upon the blood of a blue-green caterpillar spun not bright yellow cocoons like those spun by such parasites after emerging from a yellow-green caterpillar, but pure white cocoons. The cast skin of the pupa also lacks yellow. The missing yellow is probably xanthophylloid pigment derived from chlorophyl of the food (clover). This variation does not affect the wing-color of the butterfly.

Both of these mutants have appeared in the same family in a 9:3:4 ratio (9 yellow-green: 3 olive: 4 blue-green), the double recessives probably being the blue-green caterpillars with a faint orange sheen that we observed in a family of this sort.

Hybrids

A hybrid cross between *Colias eurytheme* (orange) and *C. philodice* (yellow) was shown, demonstrating the incomplete dominance of orange. F_1 is intermediate, or pale orange; F_2 shows segregation of the orange-yellow producing factors. One of the families showed also the transmission of a white sex-limited variation in wing-color of the female by an orange (*eurytheme*) son of white female (and the mate of a yellow (*philodice*) female to half of his hybrid daughters, 50 per cent of which were white, 50 per cent pale orange.

49. *Exhibitor:* Dr. W. M Goldsmith, Southwestern College, Winfield, Kansas.

Exhibits: "The Catlin Mark." Model skull, 4 photographs, and 1 diagram showing the location of the mark, an unusual opening in the parietal bones. Family history chart showing its presence in several generations (Plate 5, Vol. I).

50. *Exhibitor:* Mr. Charles W. Gould, Retired from the Bar, 5 Washington Square, North, New York, N. Y.

Exhibits: One book. "America: A Family Matter" is a study of the causes which led to the downfall of the human intelligence in the Dark Ages. The preliminary discussion would seem to show that the thoroughbred is the best animal and that care in reproduction is necessary to produce and preserve a fine strain. The argument is that as man is an animal, he is governed by the animal law and to produce the finest men physically of any one strain, crossmating should be avoided,—in short that the same care should be exercised as is taken of our domestic animals.

It is further argued that in a pure blooded carefully reproduced race, intelligence which is based upon the action of a material substance called the brain, will be improved by the improvement of the material substance of the brain which, like the muscles and organs of the body, will respond to care in reproduction.

This being the scientific or theoretical side of the question to history, the appeal is then made. The stories of Egypt, Greece and Rome are hastily sketched, and in each instance, the downfall of the race is found to be practically contemporaneous with hybridizing and mongrelization of the people.

These scientific and historic facts are then applied in a brief way to the study of conditions in the United States. The deplorable results of our lavish importation of cheap labor with the introduction of many different racial strains are noted, and the consequent loss of the singular advantage of our afore-time race purity is shown.

51. *Exhibitor:* Mr. Madison Grant, 111 Broadway, New York, N. Y.

Exhibits: One book and a series of maps dealing with migration and distribution of races. The principal feature of this exhibit consisted of enlarged copies of the several maps which appeared in the exhibitor's book, "The Passing of the Great Race." These maps showed first, the "Maximum Expansion of Alpines with Bronze Culture—3000–1800 B.C.," second, "Expansion of the Pre-Teutonic Nordics—1800–100 B. C." third, "Expansion of the Teutonic Nordics and Slavic Alpines—100 B.C.—1100 A.D.," and fourth, "Present Distribution of European Races."

52. *Exhibitor:* Harcourt, Brace & Company, Publishers of Books, 1 West 47th Street, New York, N. Y.

Exhibits: One book.

53. *Exhibitor:* Harper & Brothers, Book Publishers, Franklin Square, New York, N. Y.

Exhibits: Seven Books on Americanization, as follows: "The Schooling of the Immigrant," by Frank V. Thompson. "America via The Neighborhood," by John Daniels. "Negro Faces in America;" "Old World Traits Transplanted," by Herbert A. Miller and Robert E. Park. "Immigrant Health and The Community," by Michael M. Davis, Jr.; "A Stake in the Land," by Peter A. Speek. "New Homes for Old," by S. P. Breckenridge.

54. *Exhibitor:* Dr. Hornell Hart, Head of the Sociological Divison of the Iowa Child Welfare Research Station, Iowa City, Ia.

Exhibits: A four-dimensional chart illustrating fecundity in relation to three other variables. The data used in the investigation were the returns of the 1915 Iowa State census by counties. The index of fecundity used is the number of children under five years of age per 1000 women twenty-one to forty-four years of age. This is represented on the chart by the vertical dimension. The higher the surface is, the larger is the number of children per 1000 women. The three variables with which this index of fecundity is correlated are: first, the percentage of the populations of the various counties living in incorporated places; second, the percentage of persons over school age who have attended school eight or more years; and third, the percentage of persons twenty-one to forty-four years of age owning homes.

Of these three variables the first—indicating the percentage of urban population—is represented by the depth of the chart, from front to rear. It will be noted that the back of the chart, representing conditions in almost wholly rural counties, is two or three times as high as the front, which represents conditions in counties almost wholly urban. This means that the fecundity is very decidedly lower in cities than in rural districts, the other two factors being equal. The surface is curved from front to rear. This indicates the fact that in the most rural counties, the presence of small towns makes relatively little difference in the fecundity, while in counties containing good sized cities the proportion of urban population has much more decided relationship to the birth rate.

The second variable, indicating the extent of education among adults of the counties, is represented in the width dimension of the three units in the chart. It will be noted that the right hand side of each unit is higher than the left hand. This indicates the fact that fecundity is higher in communities with fewer well educated adults than it is in communities with a large number of educated adults, provided that the other two variables are constant.

The third variable, percentage of middle-aged adults owning homes, is represented by the positions of the units from right to left. The right hand unit represents fecundity when home ownership is at a minimum, the left hand unit represents fecundity when home ownership is at a maximum. The fact indicated is that *when the other two variables are constant*, home ownership is inversely correlated with fecundity. If the simple correlation between fecundity and home ownership is calculated, it appears that the correlation is positive, because home ownership is more common in rural districts than in cities. Partial correlation is needed here to bring out the true relationship.

The tendencies shown by the partial regression surface in the chart may be summarized by saying that the highest fecundity tends to occur in rural communities inhabited by poorly educated tenant farmers, while the lowest fecundity tends to occur in urban communities inhabited by highly educated individuals, a large proportion of whom own their own homes.

55. *Exhibitor:* Harvard University Press, Publishers and Printers, Randall Hall, Cambridge 38, Mass.

Exhibits: One book. Castle's "Gentics and Eugenics" second revised edition by William E. Castle, Professor of Zoölogy in Harvard University and Research Associate of Carnegie Institution of Washington.

56. *Exhibitor:* Prof. Leon A. Hausman, Instructor of Biology and Protozoölogy, Cornell University, Ithaca, N. Y.

Exhibits: Reprint of paper on "Hair Coloration in Animals." In this the author points out the structural characters of hair pigmentation in mammals, and from a cursory survey of hair from various races of mankind advances the notion that possibly the character of the pigment granules in the cortex of the hair, as well as the character of the patterns which they form, may be of use in helping to determine racial affinities. At least there is a definite variation (as far as the author has noted) in the shape, size, and color value of the pigment granules, and in the shape, size and distribution of the granule patterns in the cortex of the hair, in the different races.

57. *Exhibitor:* Henry Holt & Company, 19 West 44th Street, New York, N. Y.

Exhibits: Collection of books: Yerkes' "Army Mental Test." Chapman's "Grade Tests." Davenport's "Heredity in Relation to Eugenics." Semple's "Influences of Geographical Environment."

58. *Exhibitor:* Houghton, Mifflin Company, Book Publishers, 4 Park Street, Boston, Mass.

Exhibits: Books on Mental Measurements, as follows: "*Intelligence of School Children, by Dr. Louis M. Terman*; "*Measurement of Intelligence*," *by Dr. Louis M. Terman*; "*Test Material for the Measurement of Intelligence.*"

This includes all the printed matter necessary and also six cards showing how to score results of pencil and paper tests. A copy of the record booklet is included in each set of test material.

Record Booklet: This was especially devised for testing with Stanford Revision of The Binet-Simon Intelligence Scale.

Condensed Guide for the Binet-Simon Intelligence Test and Abbreviated Filing Record Cards.

59. *Exhibitor:* Dr. Lucien Howe, Ophthalmic Surgeon, 520 Delaware Avenue, Buffalo, N. Y.

Exhibits: Charts and Demonstration of Hereditary Eye Defects, also living rabbits showing "Guyer's results." Dr. Lucien Howe, Buffalo, gave a demonstration of hereditary blindness in rabbits, produced by serologic methods. These results were obtained first by Prof. Michael F. Guyer of the University of Wisconsin. His method was to asphyxiate or otherwise kill three or four rabbits, remove the lenses, make an emulsion of the lens substance, and inject that emulsion in carefully increasing doses into a fowl until the fowl was sensitized to the rabbit lens.

A female rabbit was then selected, which he had reason to suppose was pregnant about the tenth to the fifteenth day, that being the time when the foetal eye was in the process of formation. Into this pregnant rabbit, the serum of the sensitized fowl was injected, also in gradually increasing doses. As a result, he obtained imperfect eyes in the next generation. Then he mated these defectives and secured others, still more defective, until he had obtained a whole series. The specimen shown here is one of Prof. Guyer's rabbits which has practically no eyes at all. Most of them have cataract, usually with complications.

A number of pedigree charts were shown in this exhibit, illustrating the different rules of inheritance of many eye defects, such as cataract, glaucoma, coloboma, iritis, deformity of inner canthus, etc.

60. *Exhibitor:* Dr. Ales Hrdlička, for the U. S. National Museum and Smithsonian Institution, Curator, Division of Physical Anthropology, U. S. National Museum, Washington, D. C.

Exhibits: Variation, Heredity, Reversion, etc., in Man. These exhibits, on account of their importance, were given a separate alcove in the Darwin Hall where they filled seven cases. They related to Evolution, Variation, Reversion and Inheritance, in different parts of the human body.

Case I was filled with a phylogenetic series of brains of the Primates, including Man, cast by the gelatine method from originals hardened *in situ* (within the skull), and preserved in the United States National Museum. They included the brains of: adult gibbon, orang, chimpanzee and gorilla, the first series of adult brains of these apes it was ever possible to bring together. The same case also included three racial brains showing extremes of variation, under normal conditions, in the brain convolutions.

In the next five cases the following series was exhibited: Normal variation in the size of the skull; in the lower jaw; in the atlas and axis; in the first rib; in the sternum; in the scapula; in the sacrum; in the patella; and in the shape of the shaft at middle of the femur, tibia and fibula. A series of skulls of the American Indian showed the persistence to this day of Neanderthaloid forms and other primitive features. A series of scapulae was shown next demonstrating various evolutionary stages of this bone.

Examples of reversion were presented in a series of humeri showing variously developed supra-condyloid processes; and in a series of crania showing various forms of temporo-frontal articulation.

The hereditary transmission of recently acquired characters was illustrated by a series of five pre-Colombian crania from one cemetery on the coast of Peru, showing each a complete absence of the auditory apparatus on the right side of the skull; and by a large series of crania also from Peru, showing the great multiplication and diversification among these people of various forms of the so-called "Inca Bone."

The seventh case was filled with a series of specimens of hair showing the whole range of variation of this feature as met with in the study of upwards of 1800 representatives of the oldest American families.

Finally in an upright case was exhibited a large chart showing the results of measurements and tests on the Old Americans (Plate 18, vol. II).

Many of the individual specimens in the above exhibits were of unique nature. The main object of the exhibits was to demonstrate the facts of the existence of extensive normal variation in all parts of the skeleton as well as the rest of the body; to show that with enough material at our disposal we may connect by direct gradations any existing form with the form from which it was originally derived; and to illustrate the propagation by inheritance of new morphological and even of very definite and important pathomorphological conditions. The chart, finally, of the Old Americans showed clearly conditions of direct concern to eugenics in this country.

61. *Exhibitor:* Professor Ellsworth Huntington, 650 Canton Avenue, Milton, Mass.

Exhibits: (1) Ten maps illustrating the relation of climate to health, energy and civilization.

(a) Annual excess of births over deaths in Europe (Eastern Europe and Balkan States showing highest rate).

(b) Climatic energy in Europe (England, Northern France, Denmark, North Germany and Southern Scandinavia showing best conditions).

(c) Civilization in Europe before the Great War (Central Europe, England and South Scandinavia showing highest degree of civilization).

(d) The Health of Europe (South England, Scandinavia, Northeastern France, Denmark and Northwestern Germany,—the regions of best health).

(e) Climatic energy in the United States (Northeastern states showing the most favorable conditions).

(f) Mortality in the United States. Highest mortality rates shown in the Southern states.

(g) Distribution of civilization in the United States. Northeastern states and Pacific Coast occupy highest rank.

(h) Number of children born each year in Europe per 1,000 women 15 to 49 years. Eastern Europe, South Russia, and the Balkan States showing the highest rate.

(i) The distribution of civilization in the world. The centers of civilization showing in Central Europe, Eastern United States and Pacific Coast, South Australia.

(j) The distribution of human energy on the basis of climate. Map of the world showing great analogy to the preceding.

(2) Chart: Changes of Climate for 300 years, their effect on natural selection and the mixture of races. The curve of this diagram is based on growth of 450 big trees of California; the high parts of the curve indicating more storms and rain, i.e., highly favorable conditions for crops and human health and efficiency.

(3) Chart: The Stimulus of Storms,—curve showing the stimulating effect of storms on human efficiency.

Chart: The Effect of the Seasons on Factory Operatives,—comparative curves showing relation of efficiency and temperature and seasons.

(4) One copy "The Climatic Factor." One copy "Civilization and Climate." Nine publications.

62. *Exhibitor:* Indian Eugenics Society, Imperial Hotel, Lahore, India.

Exhibits: Photograph of organization and pamphlets. The exhibit of this society consisted of a photograph of the Organization Committee. The popular Indian name of the society is Hindusthán Játisudhár Sabhá. The society was established at Lahore, India, on Monday, June 20, 1921, through the untiring efforts, and in the beginning, single-handed, hard work of the Honorary Organizer, Professor Gopalji Ahluwalia.

63. *Exhibitor:* Indiana Board of State Charities, 404 State House, Indianapolis, Ind.

Exhibits: Four charts. Chart 1 outlines the state's provision for the care of dependents, defectives and delinquents, under the three heads of state, county and city. The governor, at the head of the system, appoints the Board of State Charities, which exercises general supervision, the State Board of Accounts, which examines into fiscal affairs, and the Board of Trustees of each of the twenty state institutions. Eight of these twenty institutions are for mental cases—five for the insane, two for the feebleminded, one for the epileptic. There is also, at the State Prison, a hospital for insane criminals. Several of these institutions have farm colonies.

Chart 2 specifies the purpose and duty of the Board of State Charities, and the various institutions under its supervision, the expenditures of which amount annually to $6,600,000. Chart 3 describes briefly what has been learned to date by the Indiana Committee on Mental Defectives, through its survey of ten representative counties. The committee has listed 5,322 insane, feebleminded and epileptic persons in these ten counties, from which it estimates that 2.1 per cent of the state's population is defective. The committee was first appointed by request of the Board of State Charities. Chart 4 refers to the Indiana sterilization law. The law was passed in 1907 and made to apply to confirmed criminals, idiots, rapists and imbeciles. Two hundred and eighteen operations were performed under it. The law was declared unconstitutional in 1921, on the ground that the person concerned was not given a hearing, this constituting a violation of the fourteenth amendment to the federal constitution.

64. *Exhibitor:* Dr. Donald F. Jones, Plant Breeder, Connecticut Agricultural Experiment Station, New Haven, Conn.

Exhibits: Selective fertilization. Pollen from a white, smooth starchy seeded pure breeding type of maize when mixed with pollen from a yellow, wrinkled sweet type and applied at the same time to the pistils of the two types, gives self and cross-fertilized seeds on each inflorescence which can be distinguished. Results from many such pollen mixtures show that with maize there is a marked tendency for that plant's own pollen to be more effective in accomplishing fertilization than pollen from related but generically somewhat different plants.

65. *Exhibitor:* The Journal of Applied Psychology, Clark University, Worcester, Mass.

Exhibits: Six copies of *The Journal of Applied Psychology.*

66. *Exhibitor:* Dr. Wilhelmine Key, Investigator and Teacher, Race Betterment Foundation, Battle Creek, Michigan.

Exhibits: Publications and charts.

Publications: (1) Feeble-minded Citizens of Pennsylvania—Report of a survey showing the need of segregation of cacogenic stocks.

(2) Heredity and Social Fitness—A Study of Differential Mating in a Pennsylvania Family. Carnegie Publication No. 296.

(3) Better American Families—Series of papers in Journal of Heredity showing the value of sound stock in America's industrial, social and political development.

Charts: (1) Three charts illustrative of Heredity and Social Fitness in the "Rufer Family." Five lines spring from Aaron Rufer, a strong, plucky pioneer, having good ability to calculate, and Mary, his easy-going wife, who was totally lacking in sense of number and proportion. Their five children showed noticeable presence or absence of these traits, and through their marriages founded widely divergent lines. Founders of lines A, B, and C, though weak in certain traits, were superior to founders of Lines D and E. Marriage usually occurred with representative of stocks possessing these traits in good measure, and has resulted in the practical blotting out of the defects of the founders. Founders of lines D and E were markedly defective; marriage usually occurring with degenerate offshoots of bad and mixed strains has resulted in line D in many drunkards, paupers, prostitutes, and thieves, while line E has been persistently imbecile.

(2) Chart showing differential migration in the Rufer Family. The active, able members of lines A, B, and C have pushed out into other sections of the country, there developing its resources and leaving the unfit members (lines D and E) behind to become a burden on the public, a physical and moral menace to the community.

67. *Exhibitor:* Miss Susan Ricker Knox, Artist-Painter, 219 East 19th Street, New York City, N. Y.

Exhibits: Sixteen paintings in oil colors. Group studies of immigrant types. These studies were made while the everyday processes of immigrant inspection at America's greatest receiving station were uninterruptedly going on. They were made in the registration room, the railroad room and the deporting and detention room. They had to be made swiftly because the groups were constantly shifting, even in the deporting and detention room where letters, telegrams and special inquiry orders were constantly being delivered and admissions and deportation intermittently going on. The individuals in the groups were, in most part, unconscious of being painted—the object of the painter being to get them as they were without pose or affectation on their part.

The pathos of deportation orders, of news of deaths in hospitals of members of the immigrants' families, or delays in arrival of expected friends, funds, letters, or telegrams, was constantly making its appeal to the artist's sympathy and adding to the difficulties of the work.

Most of the canvases portray women and children only, because the greater part of the work was done in the women's section.

The studies were painted simply because the subject involved thrilled the painter and she, in turn, tried to bring out the self-respect, self-restraint and devotion—the spirit which characterized the majority of the home seeking immigrants that came under her observation.

68. *Exhibitor:* Dr. Margaret W. Koenig, Medical Social Service, Lincoln, Nebraska.

Exhibits: Seventeen pedigree charts showing Heredity of Tuberculosis among the Nebraska Winnebago Indians. These charts were constructed as the result of a social study on an Indian reservation, with particular reference to tuberculosis. Cf. "Tuberculosis among the Nebraska Winnebago," published by the Nebraska State Historical Society, Lincoln, Nebraska. They represent the family distribution of tuberculosis based upon the actual incidence of the disease in the tribe studied and involve one hundred and ten single families or over one-third of the families on the reservation.

All marriages, of which information could be obtained from the family histories, are shown on the charts. All unions are marriage by "tribal custom"[1] unless designated by the term "legal marriage." Owing to the great frequency of marriage, the line of descent is constantly broken. To the extent that it was possible to secure family histories, the line of descent is traced principally through the female, and wherever possible, through the male line.

The chief purpose of the charts is to present an intelligible picture of Winnebago Indian life—to visualize the incidence of tuberculosis and the environmental factors surrounding and contributing to the moral and physical decline of this once fine-looking and stalwart people. A glance at the charts convinces one of the wide-spread occurrence of the disease. Generally speaking, examination of the charts shows no tuberculosis in the first generations and but an occasional case in the second. A few cases creep in in the third and in the fourth and fifth generations many cases appear. The number of cases per family ranges from two in the smallest to fifty-five in the largest. Some families are much more afflicted than others. Family 17 shows the smallest number of cases. This is an old type Indian family who still cling to the old traditions and keep up the old time customs. Since there has been little intermarriage with other races, the stream of blood in this family is almost pure Indian. Another interesting point that the charts show is the numerous instances of infected offspring from parents, one of whom is a descendant of a tuberculous family.

69. *Exhibitor:* J. B. Lippincott Company, Publishers, 227 South 6th Street, Philadelphia, Pa.

Exhibits: Books as follows: Keibel and Mall, 2 volume standard text book of "Embryology,"—the most complete treatise on this subject in English. Four volumes from the series of Monographs on Experimental Biology and Physiology contributed by Morgan, East, Jones and Parker. Woodrow's "Brightness and Dullness in Children, "Melville's "Testing Juvenile Mentality."

Examples were shown of Dearborn's group "Intelligence Tests," Series I and Series II, covering grades I to IX inclusive. These tests are arranged with a minimum linguistic requirement. Lippincott-Chapman "School Room Product Survey Tests" presenting on one sheet reading and arithmetic tests, together with scoring norms. Watson's text book of Psychology, representing the behavioristic school of psychological thought.

70. *Exhibitor:* Dr. C. C. Little, Assistant Director, Station for Experimental Evolution, Department of Genetics, Carnegie Institution of Washington, Cold Spring Harbor, Long Island, N. Y.

Exhibits: Lethal factors in mammals. Yellow mice which are not viable in a homozygous condition. They represent a mendelian color variety dominant over non-yellow (agouti or black) and exist in an adult condition only as heterozygotes. Black-eyed white mice not viable in a homozygous condition. They represent a mendelian color variety, a type of spotting dominant over the ordinary piebald variety. As adults they exist only in a heterozygous condition.

71. *Exhibitor:* Dr. A. J. Lotka, 27 McDonough Street, Brooklyn, N. Y.

Exhibits: Two charts based on birth rate, death rate and the mean length of life.

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[1] This is simply the abandonment of the spouse and perhaps the immediate marriage by Indian custom of another, merely the selecting of a mate and living together by mutual consent.

72. *Exhibitor:* Dr. Lucien March, Vice Presidént de la Société francaise d'Eugenique, Directeur honoraire de la Statistique Générale de la France, 97 Quai D'Orsay, Paris, France.

Exhibits: Graphic pictures, statistical tables and a copy of "Revue Eugenique."

(1) One volume of consecutive numbers of the "Revue Eugenique" publication of the the Société Francaise d'Eugenique, 4 Avenue Malakoff, Paris, (16) founded in 1913.

(2) Two graphic pictures of the Statistique Générale de la France, descriptive of certain results of family statistics. Influence of the number of deceased children on the number of births of the following year. Influence of the social condition upon the birth rate and the number of those children surviving to adult age. Influence of the order of birth upon the mortality in the same family.

(3) Two graphic representations compiled by the Société Francaise d'Eugenique. Family diseases, studied by Dr. Apert. Study on the return to type in human matings, by Dr. Lacemonier.

73. *Exhibitor:* Mrs. John Martin, 37 Howard Avenue, Tompkinsville, Staten Island, N. Y.

Exhibits: One book and a number of charts. This exhibit comprised a copy of the book "Is Mankind Advancing?" and the enlargement of a number of charts taken from the text of this volume. The charts showed graphically the relative and absolute incidence of men of very superior talent in several lines of human endeavor by nation and century.

74. *Exhibitor:* Mrs. Ruth Moxcey Martin, Woodbury, Conn.

Exhibits: Chart Showing Survival of Original Surnames in the Town of Woodbury, Conn. One of the oldest of American interior settlements was made in 1672 by a group of Yankees of Stratford, Conn., who decided to go as pioneers farther inland among Connecticut hills. Woodbury of the accompanying chart was the result. Cothren, in his history of Ancient Woodbury, gives full details of this immigration into land occupied at that time by Indians only.

In 1673 there were fourteen distinct surnames among the signers of the so-called "Fundamental Articles." The settlement thus began in 1672 was in 1674 made a town. Of the fourteen different surnames, among the original signers, ten are today (1921) frequent surnames in the town.

Of these ten surnames one is, however, no longer the original Yankee name of Johnson, but Swedish Johnson instead. There are nevertheless, in an adjacent town, some of the original Yankee Johnsons.

The chart shows graphically to what extent original names (and thus in part original blood) of Yankee settlers have persisted in the town.

Columns 2, 3, 4, and 5 of the chart are, as in the case of column 1, compiled from special lists of property holders, proprietors of original grants, lists of taxes laid in the town, etc., etc. These sources contained at least the more frequent, and in standpoint of citizenship, the more important, names of the town.

Columns 6, 7 and 9 are much more comprehensive. For these, lists containing names of all inhabitants of the town were used. Such lists were government census reports, special census given in Cothren's history, or names found in vital statistics covering a period of thirty years.

Column 8 contains ninety names only. This column was compiled from names of families to which Mr. Cothren has devoted some pages of genealogical data. Mr. Cothren himself told friends yet living that this list was not as full as might have been, had all of whom he solicited been prompt or willing to cooperate. These 90 names are therefore more

especially names of families sufficiently interested to provide material and assist in Mr. Cothren's efforts.

The final column, 10, is a complete list of male surnames in the town of Woodbury in 1913–14 plus (in red ink or starred) maiden names of wives, many of whose surnames once known in Woodbury, were superficially extinct, i.e., the male line of certain surnames had ceased in Woodbury, yet the blood of those surnames was often definitely present as indicated by wives' maiden names.

By reading this chart across from left to right on any given surname, it can be approximately ascertained how long the heredity of any one blood (to the extent indicated by a surname) has persisted in the town.

The chart by its very nature cannot indicate how great or how small is the proportion of each blood line. But it does give a picture, interesting to the student of eugenics and heredity, of the persistence in one New England town, of surnames of original Yankee stock.

It shows, as well (through maiden names in red ink or starred) what is observable in any study of heredity as associated with surnames, namely, the continuation of the same strain of blood even though the name has not persisted.

The chart has still another phase of eugenic interest. The period of South of Europe immigration and later the period of North of Europe immigration are evident. Celtic and Latin names appear among the names of columns 6–9, while in the chronologically much later column 10 appear Swedish, German, Polish, etc., names.

75. *Exhibitor:* Metropolitan Life Insurance Company, 1 Madison Avenue, New York, N. Y.

Exhibits: Graphic charts or racial mortality in the United States. Six graphic charts were shown in an electrically illuminated upright stand. The mortality of the principal foreign born race stocks in New York State, 1910, was shown by sex, by principal age divisions, and for important causes of death. A table was also shown, giving the expectation of life at age 10 for persons born in the United States of native parentage, and for each of the foreign race stocks by country of origin.

Comparing all foreign born persons with the native born of native parentage, it was found that the mortality rates for all causes of death combined were higher after age twenty-five for both sexes than for the native born of native parentage. The figures for the expectation of life at age 10 showed that among males, the greatest expectation of after-life span (53.4 years) was recorded for Russian-born males (mostly Jews). Males born in the United States of native-born parentage showed an expectation of 53.0 years. The expectation for other race stocks at age 10 for males was as follows: Italian, 51.9 years; English, Scotch and Welsh, 50.3 years; Germans, 49.4 years; and Irish, 38.7 years. Among females, the expectation of life at age 10 was greatest for persons born in the United States of native parentage (55.9 years).

In decreasing order, the expectation for females of the several stocks at age 10 was as follows: Native-born of native parentage, 55.9 years; Russians (mostly Jews), 55.8 years; Germans, 54.4 years; Italians, 52.9 years; English, Scotch and Welsh, 52.7 years; and Irish, 45.9 years.

Five charts were shown for the death rates from principal diseases and conditions standardized for the group of ages at and above age 10, and shown for each sex.

76. *Exhibitor:* C. V. Mosby Company, Medical Book Publishers, 508 N. Grand Avenue, St. Louis, Mo.

Exhibits: Books as follows: "Personal Beauty and Racial Betterment," by Prof. Knight Dunlap, of Johns Hopkins University, and "Sex Attraction," by Dr. Victor C. Vaughan, Director of the Medical Division of the National Research Council.

77. *Exhibitor:* Prof. Garry C. Myers, Cleveland School of Education, Cleveland, Ohio.

Exhibits: A set of Intelligence Tests. The Myers Mental Measure, A Group Intelligence Test for all ages from kindergarten to university, a continuous scale;—An outgrowth of Alpha, Beta, and Stanford-Binet and the author's experience in army testing. Standardized on about 15,000 cases, it correlates closely with Stanford-Binet.

Reprint, "A Group Intelligence Test," *School and Society*, September 20, 1919, Vol. 10:355–360. Shows statistical development of "Myers Mental Measure." Reprint, "Comparative Intelligence Ratings of Three Social Groups within the Same School," *School and Society*, April 30, 1921, Vol. 13:536–539. Intelligence ratings strongly improve with the quality of the social group. Reprint, "Intelligence of Troops Infected with Hookworm vs. Those not Infected." *Ped. Sem.*, October, 1920, Vol. 27:211–242. A study of 13,278 cases. Elaborate graphs and tables showing non-infected troops rating much better in intelligence than the infected troops.

78. *Exhibitor:* Narragansett Machine Company, Manufacturers of Gymnastic Apparatus, Providence, R. I.

Exhibits: Anthropometric Apparatus.

Anthropometric apparatus: The apparatus exhibited by the Narragansett Machine Company, of Providence, R. I., is made for use in determining physical standing of the subject, the exercises he should take and any changes brought about by the exercises.

Stadiometer or Height Stand: This is made according to the American Physical Education Association rule with the base 18 inches square and 12 inches high. The rod is maple, graduated to inches and tenths on one edge and millimeters on the other. The sliding arm is arranged to measure from its upper as well as lower surface for knee heights, etc. An extension of the sliding arm makes it easy to operate and read from the floor.

Chest Depth Caliper: This caliper was designed specially for taking maximum and minimum chest depths at the same time. It is light and easy to handle, being made of aluminum and weighing only twelve ounces. The pressure is constant, being applied by a spring, hence the indications are independent of the observer. Its capacity is from 4 to 10.6 inches or 10 to 27 centimeters. The scales are interchangeable.

In use the caliper is held horizontal with the arm of the subject in the bow.

Shoulder Breadth Caliper: This is the common form of sliding arm caliper for measuring chest, hips, etc. It is made of maple, graduated to inches and tenths to inches and millimeters.

Wet Spirometer: The wet spirometer is designed to measure lung capacity or maximum inhalation. It consists of a balanced cylinder of known volume arranged to rise and fall in a water tank. One of the supporting columns is graduated to cubic inches on one scale and to cubic decimeters on the other side. Antiseptic mount pieces are provided.

Manuometer: The Manuometer or grip dynamometer is used for testing the muscles of the hand and forearm. This form records correctly all pressure applied to it, and cannot be overstrained or made to record high by bringing all the pressure to bear on the centre.

The graduation may be metric or English. It is held in the hand, dial towards the palm and top against the fingers.

Push and Pull Attachment: A sliding frame to hold the manuometer so that push and pull tests, not exceeding 200 pounds (100 kilos) may be made.

Back, Leg and Chest Dynamometer: For making strength tests of the back and legs. It has a capacity of 2000 pounds (900 kilos). For use it has standard base and handle.

79. *Exhibitor:* National Association for the Study & Education of Exceptional Children, 276 West 94th Street, New York, N. Y.

Exhibits: Chart, books, pamphlets. This exhibit consisted of (a) a chart explaining the organization and purpose of the National Association for the Study and Education of Exceptional Children, and (b) eighteen books and pamphlets bearing on the special problem of the backward child.

80. *Exhibitor:* National Child Labor Committee, 105 East 22d Street, New York, N. Y.

Exhibits: Pamphlets. A copy of the quarterly magazine, *The American Child*, which in each successive issue, contains the current history of child labor reform, the results of special investigation and research, and the fruits of the best constructive thought in the field covered by the magazine.

"Child Welfare in Tennessee," an inquiry by the National Child Labor Committee for the Tennessee Child Welfare Commission.

Child Labor Facts.

81. *Exhibitor:* National Child Welfare Association, 70 Fifth Avenue, New York, N. Y.

Exhibits: Picture-panels on prenatal care, care of infants, health, education, foods. The exhibit consisted of a selection of seventy-nine of the Association's educational picture-panels for teaching health habits. They are intended for use in schools, clinics, health centers, settlements, hospitals and wherever hygiene progaganda work is needful.

82. *Exhibitor:* National Committee for Mental Hygiene, 50 Union Square, New York, N. Y.

Exhibits: Seven publications of the Society.

83. *Exhibitor:* National Health Council, Coördinator of voluntary health agencies, 370 Seventh Avenue, New York, N. Y.

Exhibits: One organization chart. The exhibit of the National Health Council is merely an organization chart showing the members of the Council, their officers, committees, and the functions and services of the Council as they appeared six months after organization. The list of members at that time included the American Social Hygiene Association, the National Committee for Mental Hygiene, the National Organization for Public Health Nursing, the National Tuberculosis Association, the American Public Health Association, the American Red Cross, the American Society for the Control of Cancer, the Conference of State and Provincial Health Authorities of North America, Committee on Health and Public Instruction of the American Medical Association and the National Child Health Council.

The organizations coöperating through the National Child Health Council are also shown. These include the American Child Hygiene Association, the Child Health Organization of America and the National Child Labor Committee.

The conference member, the United States Public Health Service, is shown in a way that brings out its relationship to the Council.

The functions and services of the Council are listed as: Washington Activites, General Information Service, the Common Service Committee, the Health Coördination Activities, Publications and other services. The Interstaff conference groups are also shown and possible future relations are projected, especially relations with state and local coöordinated organizations.

84. *Exhibitor:* New York State Commission for Mental Defectives, 105 East 22nd Street, New York, N. Y.

Exhibits: Four charts (Plate 44, Vol. II) showing the following: (1) Clinics 1920–1921 (some statistics on clinics and their work). (2) Work of Field Agents. (3) Distribution of Clinics (map of United States). (4) Forms used.

85. *Exhibitor:* New York State Department of Health, Albany, N. Y.

Exhibits: Organization chart of the Department.

86. *Exhibitor:* Honorable Harry Olson, Chief Justice, Municipal Court of Chicago, Chicago, Illinois.

Exhibits: Four reports of the Psychopathic Laboratory of the Chicago Municipal Court.

87. *Exhibitor:* Osborn Biological Library, American Museum of Natural History, 77th Street and Central Park West, New York, N. Y.

Exhibits: Pamphlets and books dealing with the problems of heredity and evolution.

88. *Exhibitor:* Professor Serafino Patellani, Corso Magento, 60, Milan, Italy.

Exhibits: Ten Bulletins on eugenics.

89. *Exhibitor:* Dr. Stewart Paton, Princeton University, Princeton, N. J.

Exhibits: Book, "Human Behavior."

90. *Exhibitor:* Professor Theophilus S. Painter, Department of Zoölogy, University of Texas, Austin, Texas.

Exhibits: One chart. The chart "The Chromosomes of Man" (plate 1, Vol I.) gives the essential results of a study on human spermatogenesis made by the author. Figures 1 and 2 show that there are 48 chromosomes (24 pairs) in the germ cells (spermatosonia) of a white man, this number including the body labeled "Y." The negro (figs. 3 and 4) shows the same number of chromosomes and the presence of the Y chromosome. In figures 5 and 6 the chromosomes of the white man and the negro are compared. They are alike in general form and in number. Figure 7 shows the "reduced" chromosome number of man to be 24. Figure 8 shows the sex chromosomes of man which are of the X–Y type. When such a cell divides, the X chromosome goes to one pole and the Y to the other. This is shown in figure 9 taken from a white man, and in figure 10 which is from negro material. As a result of this, one half of the sperm will carry an X chromosome, and one half will carry a Y chromosome. Sex determination in man then is simply a matter of which sort of sperm fertilizes the egg. If the sperm carries an X chromosome, then the resulting offspring is a female, but if the sperm carries a Y chromosome, a son will result.

91. *Exhibitor:* Dr. William Patten, Dartmouth College, Hanover, N. H.

Exhibits: One copy "Growth"—introduction to the freshman course in Evolution.

92. *Exhibitor:* Prof. Raymond Pearl, Professor of Biometry and Vital Statistics, School of Hygiene and Public Health, Johns Hopkins University, Baltimore, Md.

Exhibits: Organization chart, of the staff and the different lines of research activity of the Department of Biometry and Vital Statistics of the School of Hygiene and Public Health of the Johns Hopkins University. (See also page 25.)

Diagrams showing census and vital statistics of the County of London, central area, and Greater London (two charts, ten diagrams):

(1) Population of London and the County of London. Census statistics 1801–1911.

(2) Comparative curves showing growth of population of London, New York, Paris, Berlin and Vienna.

(3) Growth of population of the city of London and each Metropolitan Borough 1801–1911.

(4) London Metropolitan Boroughs (continued).

(5) Birth and death rates, London, 1841–1919.

(6) Death rates according to ages and causes. County of London, 1918.

(7) Comparison of birth and death rates. County of London, 1914–1919.

(8) Pauperism. England and Wales, including London.

(9) All paupers.

(10) Lunacy and mental deficiency.

93. *Exhibitor:* Dr. James P. Porter, Clark University, Worcester, Mass.

Exhibits: Two charts showing children's effort at illustrating their first reading. Six copies of *Journal of Applied Psychology.*

94. *Exhibitor:* Dr. H. W. Potter, Letchworth Village, Thiells, N. Y.

Exhibits: One cloth chart (9 by 7 feet), Mental Deficiency and Endocrine Disorders; analysis of six typical cases showing connection between mental and physical defects.

One pedigree chart showing 63 *related* cases, all charges of State Charities and Associations in Rockland and Orange Counties, with photographs of members now at Letchworth Village.

Eleven photographs of Letchworth Village showing institution buildings and interior.

95. *Exhibitor:* Prof. S. L. Pressey, Ohio State University, Columbus, Ohio.

Exhibits: Sample materials for Mental Measurement.

96. *Exhibitor:* The Prudential Insurance Company of America, Newark, N. J.

Exhibits: Graphic charts on Morbidity and Mortality Statistics. Several series of charts have been issued on vital statistics of some of the states and cities of the United States and of the more important causes of death. The charts graphically illustrate the progress of disease prevention in the lowering of the death rate from certain causes of death. The charts are indicative of the work that has been done and can be done in health matters. The data shown touched upon the health education work from the eugenics standpoint by bringing out the point that better health conditions are conducive to better living and well-being.

97. *Exhibitor:* Race Betterment Foundation, by Dr. J. H. Kellogg, President, Battle Creek, Mich.

Exhibits: a. Universal Dynamometer. This instrument was devised by Dr. Kellogg to test the strength of each group of muscles and the aggregate strength of the human body. It is now in use by the United States Government at its Military and Naval Academies and in the leading gymnasiums of the country. The method of operation is shown in the accompanying illustration. The results of the tests are plotted upon graphics, which show in each case how the individual stands in relation to the average or normal man or woman. Each point which falls below the line 100 is a weak point; each point which rises above is a strong point. The exact amount of deviation is also recorded in figures along the top of this "strength chart." At the right hand of the chart is space for the record of the Height-Weight, Strength-Weight and Strength-Height Coefficients. A comparative study of thousands of tests has disclosed the facts shown in the accompanying table and illustrates the value of this instrument in a precise study of muscular development in men and women.

b. A series of charts illustrating the principles of Eugenics, including diagrams on marriage, fecundity and immigration. (Plate 23, Vol I).

98. *Exhibitor:* Dr. D. F. Ramos, Havana, Cuba.

Exhibits: One diagram "Homiculture," illustrating the desirability of care of environment and health through the cycle of life.

99. *Exhibitor:* Red Polled Cattle Club of America, Richland Center, Wis.

Exhibits: Chart and photographs of specimen cattle. Red Polled Cattle are a dual purpose breed. In the report of the origin and early history, we find that hornless or polled cattle existed in the county of Suffolk, England, from time immemorial, and early

historians report whole herds of red, polled cattle in the county of Norfolk, England. In the year 1846, these two strains were merged together and the present breed founded.

Historical reports show that red muley cows were brought over from Norfolk and Suffolk by the early colonial settlers. The first real importation after the breed was thoroughly established was in 1873. G. F. Tabor of New York made an importation of one bull and three heifers. From that time on, many importations were made.

Red Polls have always been bred and used as a dual purpose breed, the cows being profitable producers when used in the dairy and the young stock making an excellent stock cattle, fattening very readily and producing an excellent butcher's carcass.

100. *Exhibitor:* La Reform Medica, Direccion, Apartado 987, Lima, Peru.

Exhibits: Three Copies of *La Reform Medica*, 3 bulletins on legislation for sanitation in Peru.

101. *Exhibitor:* Royal Statistical Society of London, 12 St. James Square, London, England.

Exhibits: Eighteen copies of the Society's publications.

102. *Exhibitor:* Russell Sage Foundation, An organization for research and publication, 130 East 22nd Street, New York, N. Y.

Exhibits: Books: The publications of the Russell Sage Foundation represent original research and an unbiased interpretation of conditions of life, labor, and education in the United States, and the utmost care is given to their preparation and publication. Some of them have been reprinted several times. "Social Diagnosis" is now in its seventh printing (thirteenth thousand), Goldmark's "Fatigue and Efficiency" in its sixth printing, and Gulick and Ayres' "Medical Inspection of Schools" in its fifth printing. These books are not issued for profit—few if any even pay for the cost of publication, but are part of an educational program.

103. *Exhibitor:* Dr. A. H. Schultz, Research Assistant, Department of Embryology, Carnegie Institution of Washington, Baltimore, Md.

Exhibits: Racial differences in human fetuses. (Plates 35 and 36, Vol. II.)

104. *Exhibitor:* Mr. Harvey J. Sconce, Farmer and Plant Breeder, Sidell, Ill.

Exhibits: Examples of Segregation in Corn Breeding (Plate 10, Vol. I).

Purple leaf, husk and stalk, with purple pericarp hybridized with white leaf, and pericarp; pod corn with character not pure for pod, and with some of yellow endosperm.

F_1 generation podded purple, when selfed, brought an array of segregates showing purple podded and non-podded, white podded and non-podded, with great variations of podding and purple indicating the recombinations of numerous modifiers.

F_2, like F_1 podded purple, crossed to Johnson County White to get lighter colors of purple.

F_3 array much like F_2 showing some examples of the numerous forms arising in this experiment, also many variations of purple, pink and crimson leaf and husk colors. Podding evidently heterozygous in some Johnson County White since non-podded forms appeared again.

It is quite disease resistant, very early maturity, wind resistant, easy to husk, and made an average yield of 12 bushels to the acre more than either of the parents, on acreages of 80 acres. However, the ear is more tapering, and not so cylindrical as the Reid Yellow Dent, more flinty after the Low Corn, and consequently is not the show ear type, but it weighs more per bushel as the kernels are more flinty and more disease resistant than the Reid Yellow Dent.

105. *Exhibitor:* Charles Scribner's Sons, 597 Fifth Avenue, New York, N. Y.

Exhibits: Collection of books. "Is America Safe for Democracy," McDougal; "Human Behavior," Paton; "Rising Tide of Color," Stoddard; "New Stone Age," Tyler; "Passing of the Great Race," Grant; "Origin and Evolution of Life," Osborn; "New World of Islam," Stoddard; "Direction of Human Evolution," Conklin; "Civilization—Its Cause and Cure," Carpentier.

106. *Exhibitor:* Society for Promoting Eugenics in New Zealand, Dunedin, New Zealand.

Exhibits: Reprints of two papers "The Cause for Promoting Eugenics."

107. *Exhibitor:* Societa Italiana di Genetica ed Eugenica, Rome, Italy.

Exhibits: Twelve bulletins and an outline of the project for the creation of an Italian Institution of Hygiene, Prevention, and Social Assistance.

108. *Exhibitor:* Dr. Joh. Van Der Spek, Doldersche Weg. 60, Den Dolder, Holland.

Exhibits: Dutch Folk Types. (Plate 28, Vol. II.) (a) Ninety-four photographs of individuals and groups of individuals portraying occupations, customs and facial types of different parts of Holland. (b) One copy pamphlet by Dr. P. J. Waardenburg.

109. *Exhibitor:* Dr. Hazel M. Stanton, Psychologist, Eastman School of Music, Rochester, N. Y.

Exhibits: The Inheritance of Musical Capacities (Charts) (Plate 6, Vol. I).

Note: The Columbia Graphophone Company of New York loaned a graphophone and a set of the Seashore Records, which were demonstrated by Dr. Stanton in connection with her exhibit. These records are used for testing and measuring specific elements of musical talent in individuals.

110. *Exhibitor:* State Hospital Commission, Albany, N. Y.

Exhibits: Ten charts. The exhibit consisted of 10 charts (each 26 inches by 44 inches) giving results of studies and investigations made by Dr. A. J. Rosanoff, clinical director, Kings Park State Hospital, and Dr. Horatio M. Pollock, statistician and editor, State Hospital Commission. Data were set forth relative to the following topics:

(A) Psychopathic Heredity.

Chart 1. Similiar Heredity, showing the inheritance of manic-depressive psychoses.

Chart 2. Dissimilar Heredity, showing a family with epilepsy and manic-depressive and other psychoses.

Chart 3. Collateral Heredity, showing dementia praecox in two brothers, a violent temper in a maternal uncle but no mental disorder in parents or grandparents on either side.

Chart 4. Atavistic Heredity, showing mental disorder reappearing in a family after skipping a generation.

Chart 5. Inheritance of Neuropathic Constitution, giving a comparison of actual findings and theoretical expectation according to the Mendelian Theory.

Chart 6. Alcoholism in Families of Patients with Alcoholic and with Other Psychoses, showing data derived from the study of 1,288 cases of alcoholic psychoses and 4,153 cases of other psychoses whose family history was ascertained.

Chart 7. Family History of Neuropathic Conditions of Patients in Principal Groups of Psychoses, showing data derived from the study of 13,854 first admissions whose family history was ascertained.

(B) Increase in Mental Disease.

Chart 8. Increase of Insane in Institutions Compared with Increase of General Population in United States in 1880–1920, showing that the former increased 468.3 and the latter, 110.8 per cent.

(C) Insanity in Urban and Rural Districts.

Chart 9. Rates of First Admissions with Principal Psychoses in Urban and Rural Districts per 100,000 Population of Same Environment, showing data based on a study of 33, 039 first admissions.

(D) Prevalence of Dementia Praecox.

Chart 10. Comparison by Sex and Age Groups of Rates of Native and Foreign Born Dementia Praecox First Admissions per 100,000 of General Population of Same Sex, Age and Nativity, showing data based on a study of 9,095 first admissions to the New York State hospitals.

111. *Exhibitor:* Dr. Lothrop Stoddard, Author, 1768 Beacon Street, Brookline, Mass.

Exhibits: Two books and a series of maps. "The Rising Tide of Color against White World-Supremacy" is an analysis of the movements toward greater self-consciousness and self-assertiveness among the non-white races of the world, which began about a generation ago and which have been much intensified by the Great War and the attendant weakening of the white races. It also discusses disgenic tendencies in white civilization, especially low-type immigration.

The maps accompanying the above book (enlargements of which were displayed among the Exhibits at the Conference) show, in colors, (1) the distribution of the primary races throughout the world; (2) the Categories of White World-Supremacy; (3) the distribution of the white races.

"The French Revolution in San Domingo" is a historical monograph describing the destruction of French colonial rule and white civilization in San Domingo, and the island's consequent reversion to African barbarism as shown by the Haiti of the present day.

112. *Exhibitor:* Prof. Griffith Taylor, Associate Professor of Geography, University of Sydney, Sydney, Australia.

Exhibits: One wall-diagram dealing with racial variation. Professor Taylor writes: My research on the climatic and physiographic control of racial migration—supported by anatomical evidence—leads me to believe that the so-called 'colored races' (excluding the negro and negrito) are not necessarily lower in the biological scale than the Anglo-Saxons. I have put forward a graphic analysis of race variation, which I call the Lava-Flow analogy. Here I postulate a central Asiatic 'focus of variation', where, owing to the unique climatic changes, man was most subject to evolutionary development. Hereabouts all the races of man developed and their migrations were at first determined by the onset of the expanding ice-fields of northern Eurasia (and later by increasing desiccation). These drove away the forest belts toward the equator and also the animals (including man) who dwelt therein. When a mild interglacial period set in, the forests spread poleward again. Some tribes remained isolated or lost in the equatorial regions and did not evolve, for there was no stimulus then any more than there is now. Those tribes who returned to the central Asiatic region were subjected to climatic stimulus of a pronounced type and gradually evolved into the Hamitic folk. The onset of the next ice age led to their dispersion—but those who returned to or still remained in central Asia were developed into Iberian and Semitic peoples in the next long interglacial. So also arose the Aryan races, including our progenitors. These were dispersed in an irregular zone all around Asia. Science already recognizes the Aryan affinities of the Polynesian—but I would claim even closer

affinities for the Melanesians of the Solomon Islands and adjacent regions. I also believe that the Amerinds should be zoned in the same fashion, so that the Arawak and Carib peoples and many of the Plain Indians of North America belong essentially to the same zone as ourselves.

Carrying this line of reasoning further, we must conclude that the peoples nearest the 'focus of variation' are more lately developed than ourselves. Hence the Mongolian peoples of central and southeast Asia, and the more brachycephalic peoples of America belong to higher (i.e., later) zones than ourselves.

The bearing of this hypothesis on the problems of racial status and of half-castes is obvious. It is not a racial deterioration when an Anglo-Saxon mates with a Mongolian or with a Polynesian or with most Amerinds. In my opinion race prejudice, rather than race deterioration, is the factor involved.

The maps and diagrams exhibited were taken from my paper "The Evolution and Distribution of Race, Culture and Language", January, 1921, *Geographical Review*, New York, pp. 54–119; 27 maps and diagrams.

113. *Exhibitor:* Dr. W. B. Terhune, Connecticut Society for Mental Hygiene, 39 Church Street, New Haven, Conn.

Exhibits:

(a) One chart—"The Relation of Montana State Government to Social Inadequacy."

(b) One chart—"The Relation of West Virginia Government to Social Inadequacy."

(c) Two Print Diagrams, showing the manner in which Ohio cares for the socially inadequate.

(d) Eight charts—Family pedigrees of cacogenic families, inheritance of alcoholism, feeblemindedness, epilepsy, and insanity, studies from cases at the Connecticut State Hospital.

(e) One chart showing "The relation of the Connecticut State Government to Social Inadequacy, 1921."

(f) Government care and various philanthropic organizations.

114. *Exhibitor:* Prof. R. J. Terry, Professor of Anatomy, and Mr. Lee D. Cady, Student of Medicine, Washington University School of Medicine, St. Louis, Mo.

Exhibits: Comparison of the incidence of the supracondyloid process in groups with normal and abnormal mentality (21 X-ray pictures). The occurrence of the supracondyloid process in man, a variation of the humerus, has been the subject of investigation by a number of anatomists since its discovery in 1821 by Tiedemann. It is generally regarded as the homologue of the bony bar which completes the boundaries of the supracondyloid (entepicondylar) foramen irregularly distributed but a normal feature of the humerus in nearly all orders of mammals. Foramina on either or on both medial and lateral aspects of the distal extremity of the humerus are present in living and fossil reptiles. Evidence of heredity of the variation in man has been noted by Struthers and recently by Terry. Several studies of the incidence of the variation in man show differences in results and the question has been raised (Testut, Nicolas, Ferdinando) as to the possible correlation of race and also mentality with the frequency of the process in man. The variation is claimed to be rare among colored races; figures have been given to show a higher incidence among the insane than in normal people. The pictures shown here are X-ray prints of the humeri of two groups, normal and insane persons presenting the variation. The normal group was constituted by 1,000 persons of both sexes taken from the laboring class; the insane group of an equal number, male and female under restraint in a public sanatorium. Apparently the physical characters of the variation are the same in both groups. Com-

paring only whites, the incidence was found to be slightly greater in the insane (1.2 per cent) than in the normal (0.88 per cent) and is not regarded as of significance in this investigation. A study should be made of the incidence of the variation in a group of mentally superior people, in order to set at rest the question of its correlation with mentality.

115. *Exhibitor:* Prof. A. M. Tozzer, Professor of Anthropology, Harvard University, Cambridge, Mass.

Exhibits: Photographs of Hawaiians and Hawaiian crosses. (Plate 29, Vol. II.) The photographs were taken by Mrs. C. H. Gurrey, of Honolulu, and are portraits of Hawaiians, and Hawaiians crossed with Chinese, Japanese, Portuguese, Tahitian, Spanish, French, Irish and "American."

116. *Exhibitor:* Training School, Vineland, N. J.

Exhibits: Two cloth charts: (a) Social Ratings Scale, Relation to Mental Tests (Binet and Porteus Scale). (b) Characteristics correlating highest with social fitness (Porteus social rating scale).

Five framed charts (Plates 12 & 13, Vol. I). (a) Condensed guide, to the Binet tests, a sample copy of the publication and two blank record folders. (b) Method of head measurements, showing a radiometer for head height and its application. (c) Nine pictures of the Training School at Vineland. (d) Sample copy of publication "Porteus Tests." (e) Four tables on brain growth in males (cubic capacity and head form).

117. *Exhibitor:* U. S. Department of Labor, Bureau of Naturalization, Washington, D. C.

Exhibits: (1) Fifth Year Annual Report describing the educational work of the Bureau. (2) Naturalization laws and regulations. (3) Naturalization educational record cards. (4) Facts form for declaration of intention. (5) Facts for petition for naturalization. (6) Request for Certificate of Arrival. (7) Letter of Invitation sent by Bureau to candidate for citizenship to attend public school citizenship class. (8) Letter of invitation to wife of candidate for citizenship. (9) Data on English and citizenship classes for fiscal year, ended June 30, 1921. (10) Data on nationalities represented in citizenship classes, reported for fiscal year, 1921.

118. *Exhibitor:* Volta Bureau, 1601 35th Street, N. W., Washington, D. C.

Exhibits: Heredity of Deafness. Eight pedigree charts illustrating the inheritance of deafness, emphasizing matings where both come from deaf strains.

Original document signed by those present at breaking of ground for Volta Bureau Building. One genealogical chart. One genealogical record book.

119. *Exhibitor:* Voluntary Parenthood League, St. Denis Building, 11th Street & Broadway, New York, N. Y.

Exhibits: Nine charts. This exhibit comprised eight charts giving graphic statistics showing inferentially one of the chief causes of infant mortality, namely, the too rapid succession of children in families where conditions are unfavorable, and the unwise spacing of births; also one chart showing the extent of legislative prohibition of contraceptive information on the effect upon the states of repealing federal prohibition.

120. *Exhibitor:* Dr. H. E. Walter, Brown University, Providence, R. I.

Exhibits: Set of Mendel Boards and Blocks.

Mendel Board: A device for showing, by means of movable cardboard symbols, the theoretical combinations in dihybrids.

The four pockets at the top and at the left side are for the cardboard symbols representing the male and the female gametes repectively. The sixteen pockets, forming the enclosed checkerboard, are receptacles for the paired cardboard symbols representing

the possible zygotes formed in a Mendelian dihybrid; cardboard symbols, round and notched, represent smooth and wrinkled peas, green and yellow for corresponding colors in seed coats of peas; tall and short for tall and dwarf pea vines, etc. Various other symbols may be employed for other characters of animals and plants.

By this device may be shown visually the significance of gametes and zygotes, allelomorphs, homozygotes and heterozygotes, dominance, segregation, the independence of unit characters, the results of back-crossing, etc.

By using two gametes from each parent instead of four, and four pockets within the checkerboard instead of sixteen, the monohybrid may be demonstrated.

Trihybrid Blocks: A device for visualizing the possible combinations in the F_2 generation of a trihybrid. There are 64 blocks. Each block is made with its opposite faces alike. Three arbitrary symbols painted on the blocks that may represent any actual characters as desired, are squares, circles and triangles. On each face the symbols appear double, overlapping each other, to represent the zygotes formed from two parental gametes. When the symbols are solid black, they represent dominants. The corresponding recessives are drawn in outline.

With one set of symbols turned up—for example the squares—the blocks may be arranged in four square groups of 16 each, representing the F_2 generation of a monohybrid. One group will be entirely made up of double black squares (pure dominants); two groups will each show the combination of a black square and an outline square (hybrids), and the fourth group will have double outline squares (recessives). This is the typical 1:2:1 Mendelian proportion for a monohybrid in the F_2 generation.

Each of these four groups of 16 may now be arranged in four rows of 4 each, leaving the squares up, so that in one direction the circles, and in the other the triangles will likewise read 1:2:1. The four groups of 16 each may now be superimposed to form a cube containing all the 64 blocks, reading independently in three directions as Mendelian monohybrids. The blocks may be used to demonstrate, among other things, the Mendelian explanation of blending inheritance by duplicate genes. To do this, each block symbol, regardless of its shape, may be taken as one of duplicate genes. If now the 64 blocks which represent the possible progeny in the F_2 generation of a Mendelian trihybrid, are arranged according to the number of black symbols which each shows, disregarding opposite faces, they fall into the variability curve of 1:6:15:20:15:6:1. The extremes are 0 and six black symbols respectively. The mean, of which there are 20, has three. This shows that 20 out of 64 in the Mendelian trihybrid are exactly intermediate between the grand parental extremes and form a blend like their parents of the F_1 generation, explaining why hybrids sometimes appear to breed true although Mendelian segregation actually occurs.

121. *Exhibitor:* Dr. David F. Weeks, State Village for Epileptics, Skillman, N. J.

Exhibits: Pedigree charts of epileptic families. (Plate 8, Vol. I.) This exhibit consisted of 17 framed charts, each giving the pedigree of an epileptic family represented by one or more members in the State Village for Epileptics at Skillman, N. J. These studies were made by trained field workers under the direction of Dr. Weeks. There were also a number of charts giving statistical tables showing the analysis of the families charted on the accompanying family trees and the relation between the incidence of epilepsy and associated factors.

There was also shown a large circular chart, ten feet in diameter, which gave the pedigree connections of several hundreds of defective individuals in the same family network. Several members of this family have been patients at the New Jersey State Village for Epileptics. This study too was made by the field workers of the Village.

122. *Exhibitor:* Dr. H. H. Wilder, Professor of Zoology, Smith College, Northampton, Mass.

Exhibits: Prints of typical palms and soles, photographs showing the technique of measuring a living subject, and a reconstruction of a face on a skull.

The exhibit embraced three categories:

(1) Prints of palms and soles, with illustrative drawings: (a) Comparative Anatomy of mammalian chiridia. (b) Methods of formulating palms and soles. (c) Typical prints, with lines of interpretation. (d) Analyses of separate patterns. (e) Instances of inheritance of details. (f) Palms and soles of the two types of twins. (Plate 14, Vol. I.)

(2) Photographs showing the technique of measuring a living subject. (Plate 11, Vol. I.)

(3) A reconstruction of a face on a skull, together with the original skull, and diagrams showing the method used.

The reconstruction of a face on a skull is that first devised by Prof. Wm. His, of Leipzig, and employed in the identification of a certain skull with that of the musician, Johann Sebastian Bach. The charts shown are taken from Dr. His's monograph; the skull used here is that of New England Indian excavated by the exhibitor in North Hadley, Mass., a Nonotuck Algokin. This was a young man of 25–35 years.

123. *Exhibitor:* Women's Bureau, U. S. Department of Labor, Washington, D. C.

Exhibits: Seven charts and one poster: (a) Map of United States showing States having night work laws for women. (b) Legal working hours for women, daily. (c) Minimum wage laws for women. (d) Status of women as State Labor Officials. (e) Legal working hours for women, weekly. (f) Two charts showing sample publications. (g) One illustrative poster—"America will be as strong as her women," from a charcoal drawing.

124. *Exhibitor:* Dr. F. A. Woods, Massachusetts Institute of Technology, Cambridge, Mass.

Exhibits: Photographs of Geneticists and Eugenicists. Charles W. Gould, Herbert S. Jennings, Charles B. Davenport, F. L. Hoffman, B. F. Beck, L. F. Barker, Helen Dean King, Irving Fisher, M. M. Metcalf, S. J. Holmes, Mrs. C. C. Rumsey, Dr. John L. Kellogg, Henry A. Christian, Commissioner P. P. Claxton, Major Leonard Darwin, Dr. and Mrs. Jon Alfred Mjøen, Dr. Mjøen in his laboratory, also family group and laboratory, Prof. Ernesto Pestalozza, Sir Auckland Geddes, Raymond Pearl, Lothrop Stoddard, W. F. Willcox, Harris H. Wilder, Herbert Hoover, David Fairchild, H. Lundborg, Kristine Bonnevie, Victor Delfino, Lucien March, D. Manuel Gamio, V. Guiffrida Ruggeri, Dr. N. Wille, Paul Popenoe, Bleecker Van Wagenen, John C. Phillips, A. H. Estabrook, C. H. Danforth, David Starr Jordan, Henry E. Crampton, Lucien Howe, Clark Wissler, David F. Weeks, Arthur Hunter, Chester L. Carlisle, A. J. Rosanoff, George D. Strayer, Thomas W. Salmon, F. Stuart Chapin, G. H. Knibbs, Adolph Meyer, Annie W. Goodrich, Henry H. Donaldson, H. H. Laughlin.

125. *Exhibitor:* Mr. Monroe N. Work, Editor of Negro Year Book, Director of Department of Records and Research, Tuskegee Institute, Alabama.

Exhibits: Charts and Maps. (Plate 42, Vol. II.) The exhibit was made up of two series of charts and maps. The first series was on the "Black and Mulatto Elements in the Negro Population for the 70-Year Period, 1850–1920" and consisted of two charts and two maps. Chart (1) showing black and mulatto elements in the Negro population, 1850, 1870, 1890, 1910, 1920 for the United States as a whole and for the South, the North and the West. Chart (2) showing increased black and mulatto elements Negro population in the United States by 20-year periods, 1850 to 1910 and for the 10-year period 1910–1920. Map (1)

showing the percentage by states of black element in Negro population 1850. Map (2) showing the percentage by states of black element in Negro population, 1910. The significant features of this exhibit on "The Black and Mulatto Elements in the Negro Population", were: (1) the increase of the mulatto element and the decrease of the black element. In the 20-year period, 1850–1870, the increase of the number of mulattoes to each 1,000 blacks was 168. In the period, 1890–1910, the increase of mulattoes to each 1,000 blacks was 638. For the 70-year period the increase of mulattoes to each 1,000 blacks was 415. In 1850 the mulatto element constituted 11.2 per cent of the total Negro population, 1920, 23 per cent; (2) a comparison of the maps for 1850 and for 1910 shows that the mulatto element in the Negro population was being distributed uniformly throughout the country and that there was no section of the country where there was a concentration of either blacks or mulattoes.

The second series of charts and maps was on, "The Migration of the Negro Within the United States". Chart (1) showing intersectional migration 1870 to 1920; Chart (2) showing the gain by the North and the West and the loss of the South by interstate migration. Map (1) showing the migration from the South to the North, 1916–1920; Chart (3) showing interstate migration of Negroes born in the South and living outside their state of birth in 1910 and 1920. Map (2) showing migration and the movement of the center of Negro population. The three most striking things brought out in the exhibit on migration were: (1) the large percentage of Negroes who had moved from the South to the North; (2) the greatest movement of the Negroes had been within the South from the North to the South and West; (3) in the 130 years from 1790–1920 the center of Negro population had moved over 440 miles southwest from Dinwiddie County, Va., to DeKalb County in the northeastern part of Alabama.

126. *Exhibitor:* World Book Company, publishers of school text books and standard tests of achievement and intelligence, Yonkers-on-Hudson, N. Y.

Exhibits: Books and sets of intelligence tests. The Ritchie series of school books on health.

Tests of intelligence such as the Otis Group Intelligence Scale, the National Intelligence Tests, the Haggerty Intelligence Examination, the Terman Group Test of Mental Ability, the Miller Mental Ability Test.

Tests of achievement such as the Haggerty Reading Examination, various scales and books on tests listed in the Catalog of Standard Tests.

127–131. Other exhibitors and exhibits.

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FIGURES 4 to 47

Fig. 4. Eugenical Classification of the Human Stock

Exhibited by the Eugenics Record Office

EUGENICAL CLASSIFICATION OF THE HUMAN STOCK.

BASIS:- The manner in which families assemble in their offspring heritable traits which underlie their possessors (a) social adjustment and (b) special talent or defect. Since civilization began there have been born and reared in civilized countries approximately thirty billion (30,000,000,000) persons.

EUGENICAL END PRODUCTS AND THEIR RELATIVE FREQUENCY.

I. PERSONS OF GENIUS:-

THESE 3,000 PERSONS MOST SPLENDIDLY EQUIPPED BY NATURE IN ALL HISTORIC TIME.
INCIDENCE IN THE TOTAL POPULATION OF CIVILIZED NATIONS APPROXIMATELY- 1:10,000,000.

GENERALLY MANIFEST IN SUCH COMPLEX QUALITIES AND ARTS AS:-

1. LAWGIVING-e.g.-MOSES;ALFRED THE GREAT.
2. LEADERSHIP-e.g.-CHARLEMAGNE; WASHINGTON.
3. MORAL PURPOSE-e.g.-LUTHER; LINCOLN.
4. WARFARE-e.g.-HANNIBAL; GUSTAVUS ADOLPHUS.
5. PHILOSOPHY-e.g.-ARISTOTLE; BACON.
6. RELIGION-e.g.-CONFUCIUS; SAVONAROLA.
7. EDUCATION-e.g.-PESTALOZZI; HORACE MANN.
8. ORATORY-e.g.-CICERO; WEBSTER.
9. MATHEMATICS-e.g.-EUCLID; LEIBNITZ.
10. SCIENCE-e.g.-NEWTON; DARWIN.
11. MEDICINE-e.g.-HIPPOCRATES; PASTEUR.
12. INVENTION-e.g.-GUTENBERG; BELL.
13. ENGINEERING-e.g.-ARCHIMEDES; HERRESHOFF.
14. ARCHITECTURE-e.g.-ICTINUS; MICHAEL ANGELO.
15. SCULPTURE-e.g.-PHIDIAS; RODIN.
16. PAINTING-e.g.-RAPHAEL; REMBRANDT.
17. MUSIC-e.g.-WAGNER; JENNY LIND.
18. POETRY-e.g.-DANTE; GOETHE
19. DRAMA-e.g.-SOPHOCLES; SHAKESPEARE.
20. HISTORY-e.g.-PLUTARCH; GIBBON.
21. FICTION-e.g.-HUGO; DICKENS.
22. POLITICS-e.g.-PLATO; HAMILTON.
23. STATECRAFT-e.g.-RICHELIEU; ELIZABETH.
24. DISCOVERY-e.g.-MARCO POLO; COLUMBUS.
25. BUSINESS-e.g.-CECIL RHODES; ROTHSCHILD.
26. PHYSICAL PROWESS-e.g.-PHILIPPIDES; SANDOW.
ETC; ETC; ETC.

EUGENICALLY FIT FROM STERLING INHERITANCE. The families which produce the socially valuable 9/10 of humanity among civilized people.

II. PERSONS OF SPECIAL SKILL, INTELLIGENCE, COURAGE, UNSELFISHNESS, ENTERPRISE, OR STRENGTH.

INCIDENCE IN THE TOTAL POPULATION POSSIBLY 1:1000.
THE NATURAL AND ACKNOWLEDGE LEADERS IN ALL LINES OF HUMAN ENDEAVOR; THE "WHO'S WHO" PEOPLE.

III. PERSONS CONSTITUTING THE GREAT NORMAL MIDDLE CLASS- "THE PEOPLE".

INCIDENCE IN THE TOTAL POPULATION PROBABLY 9:10.
(THE FRACTIONS 1:1000,000 AND 1:1000 ARE PRACTICALLY NEGLIGIBLE IN SO ROUGH A CALCULATION).

I. SOCIALLY INADEQUATE PERSONS.

INCIDENCE OR FREQUENCY OF SUCH PERSONS TOGETHER WITH THE STOCK THAT PRODUCES THEM IN THE TOTAL POPULATION PROBABLY 1:10.

1. FEEBLEMINDED
2. PAUPEROUS
3. INEBRIATE
4. CRIMINALISTIC
5. EPILEPTIC
6. INSANE
7. ASTHENIC
8. DIATHETIC
9. DEFORMED
10. CACAESTHENIC

II. EUGENICALLY UNFIT FROM DEFECTIVE INHERITANCE. The cacogenic families which produce the socially inadequate 1/10 of humanity among civilized people.

THE TASK OF EUGENICS:-

(a) To encourage fit and fertil matings among those persons most richly endowed by nature; and
(b) to devise practicable means for cutting off the inheritance lines of persons of natural meagre or defective inheritance.

FIG. 5. THE AVERAGE AMERICAN MALE

Statuette of man having the average proportions of 100,000 white soldiers at demobilization as determined by the United States War Department. By Jane Davenport

Fig. 6. The Chromosomes of Man

This chart gives the essential results of a study on human spermatogenesis, made by Professor Theophilus S. Painter, Department of Zoölogy, University of Texas, Austin, Texas. Figures 1 and 2 show that there are 48 chromosomes (24 pairs) in the germ cells (spermatogonia) of a white man, this number including the body labeled "Y." The negro (figs. 3 and 4) shows the same number of chromosomes and the presence of the Y-chromosome. In figures 5 and 6 the chromosomes of the white man and the negro are compared. They are alike in general form and in number. Figure 7 shows the "reduced" chromosome number of man to be 24. Figure 8 shows the sex-chromosomes of man which are of the X–Y type. When such a cell divides, the X-chromosome goes to one pole and the Y-chromosome to the other. This is shown in figure 9, taken from a white man, and in figure 10 which is from negro material. As a result of this, one-half of the sperm will carry an X-chromosome, and one-half will carry a Y-chromosome. Sex determination in man then is simply a matter of which sort of sperm fertilizes the egg. If the sperm carries an X-chromosome, then the resulting offspring is a female, but if the sperm carries a Y-chromosome, a son will result.

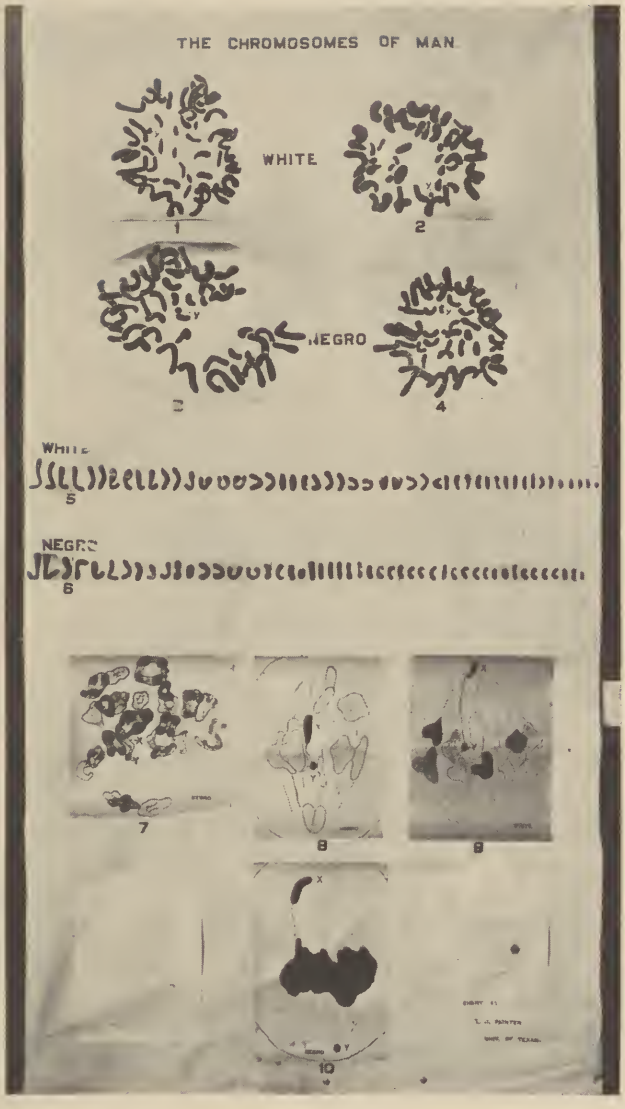

THE CHROMOSOMES OF MAN
WHITE
1
2
NEGRO
3
4
WHITE
5
NEGRO
6
7
8
9
10

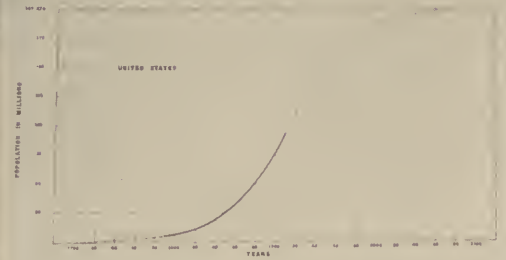
Fig. 7. Forecasting the Growth of Nations

Theoretical curves of growth of various nations and a colony of fruit flies.
Dr. Raymond Pearl

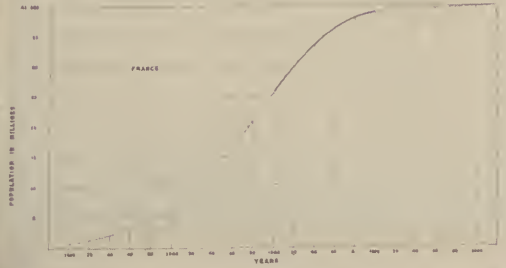
FORECASTING THE GROWTH OF NATIONS.

BY RAYMOND PEARL, PH.D. & DR. LL.D. AND FRED C. KELLY

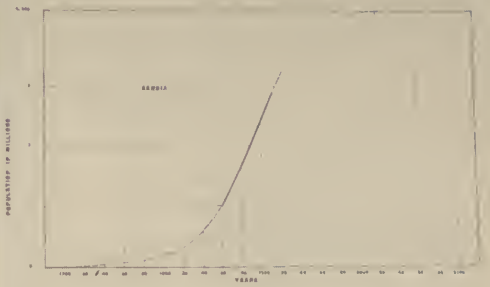
GROWTH OF POPULATION IN THE UNITED STATES.



CURVE REPRESENTING FRANCE'S POPULATION CONFIRMS THE THEORY.



GROWTH OF POPULATION IN SERBIA.



CURVE SHOWING THE GROWTH OF A COLONY OF FRUIT FLIES IMPRISONED IN A BOTTLE.

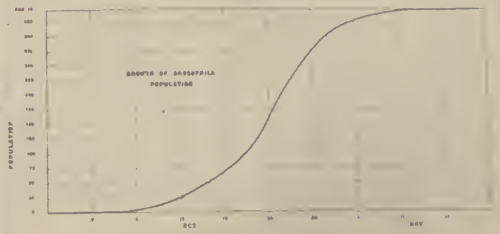
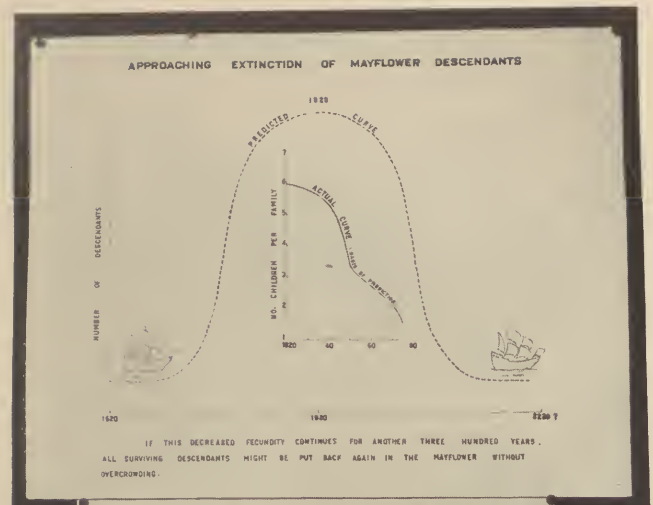


FIG. 8. APPROACHING EXTINCTION OF "MAYFLOWER" DESCENDANTS

The declining birth rate and its consequences. (1) Approaching extinction of *Mayflower* Descendants. (2) Declining birth rate among *Mayflower* Descendants. (3) Varying fecundity of the Brewster family. Eugenics Record Office.


APPROACHING EXTINCTION OF MAYFLOWER DESCENDANTS
1920
PREDICTED CURVE
ACTUAL CURVE BASED ON PRESENT
NO. CHILDREN PER FAMILY
NUMBER OF DESCENDANTS
1820
1920
IF THIS DECREASED FECUNDITY CONTINUES FOR ANOTHER THREE HUNDRED YEARS, ALL SURVIVING DESCENDANTS MIGHT BE PUT BACK AGAIN IN THE MAYFLOWER WITHOUT OVERCROWDING.

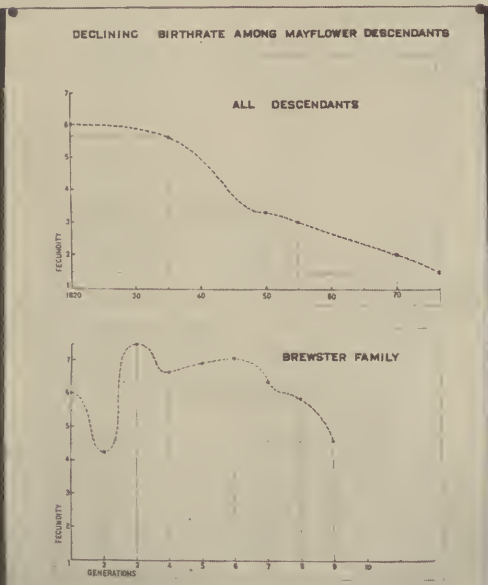

DECLINING BIRTHRATE AMONG MAYFLOWER DESCENDANTS
ALL DESCENDANTS
FECUNDITY
1820
BREWSTER FAMILY
FECUNDITY
GENERATIONS

FIG. 9. A CENTURY OF CHANGE IN HAWAII'S POPULATION

By Louis R. Sullivan

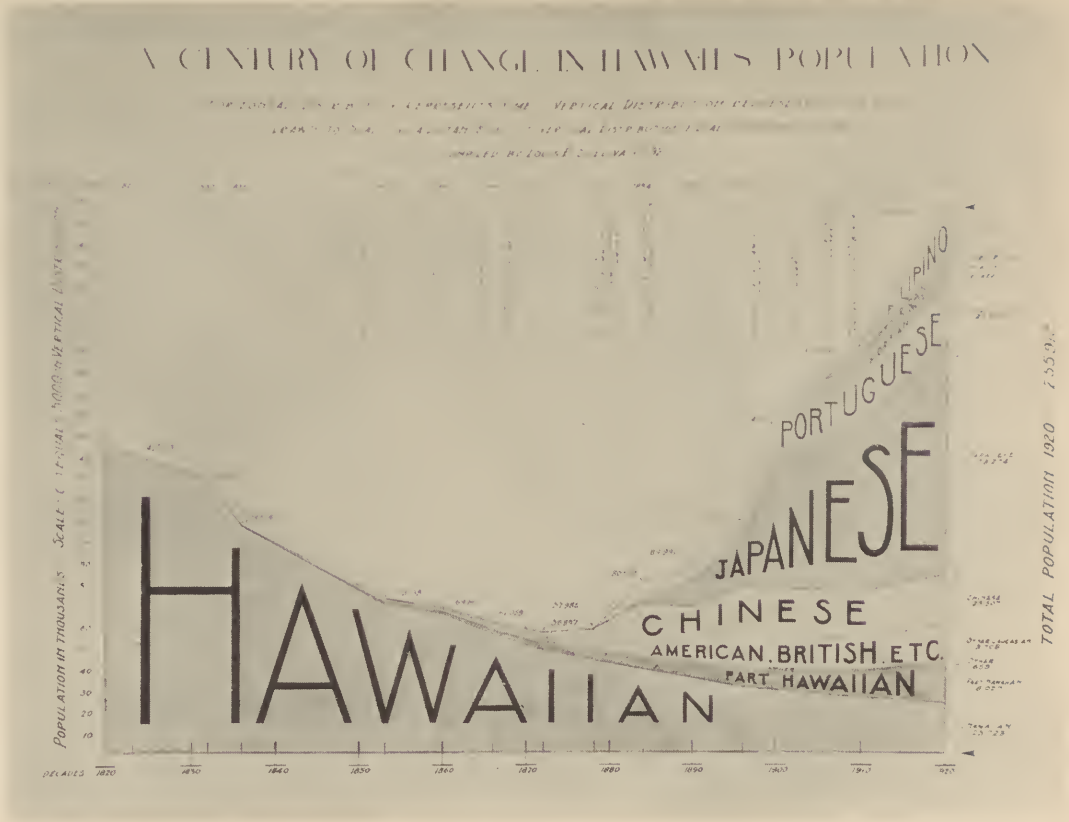

A CENTURY OF CHANGE IN HAWAII'S POPULATION
POPULATION IN THOUSANDS
DECADES
1820
1830
1840
1850
1860
1870
1880
1890
1900
1910
1920
HAWAIIAN
PART HAWAIIAN
AMERICAN, BRITISH, ETC.
CHINESE
JAPANESE
PORTUGUESE
FILIPINO
TOTAL POPULATION 1920

FIG. 10. MISCEGENATION IN HAWAII

Analysis of 14,569 unselected marriages in the Hawaiian Islands. Percentages of grooms marrying brides of the same and different national descent. Louis R. Sullivan

ANALYSIS OF 14569 UNSELECTED MARRIAGES IN THE HAWAIIAN ISLANDS DURING THE YEARS 1913 TO 1917 INCLUSIVE

PERCENTAGES OF GROOMS MARRYING BRIDES OF THE SAME AND DIFFERENT NATIONAL DESCENT

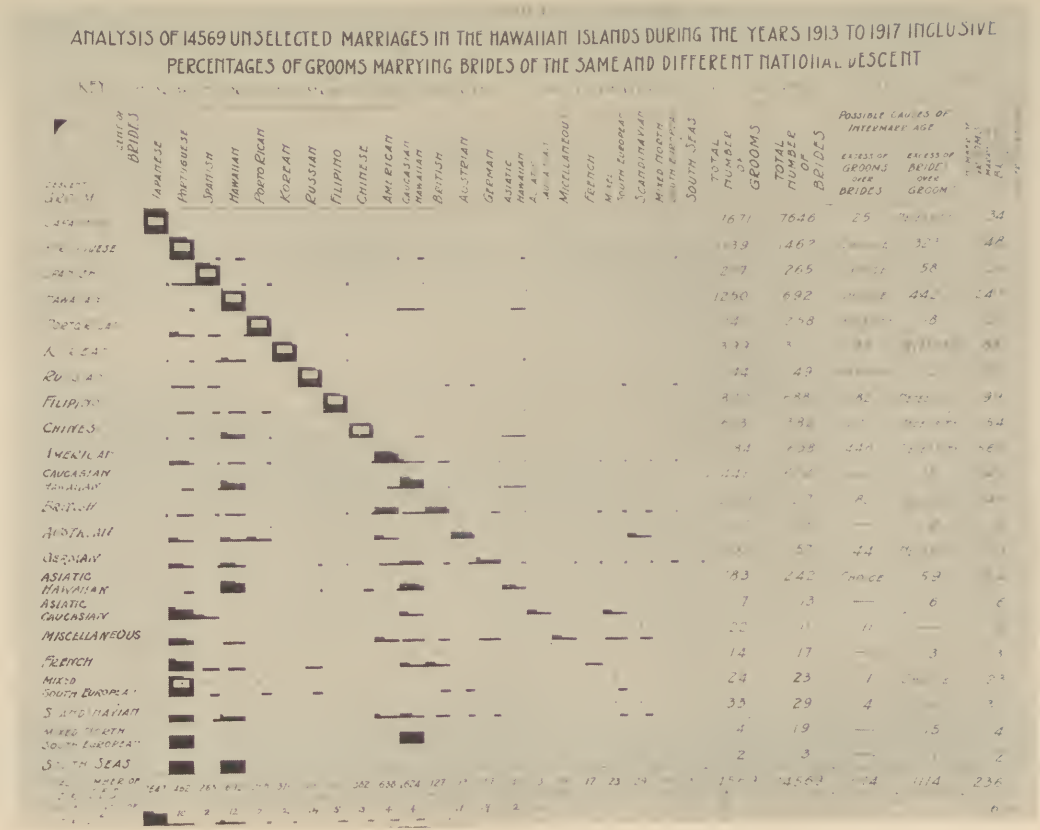


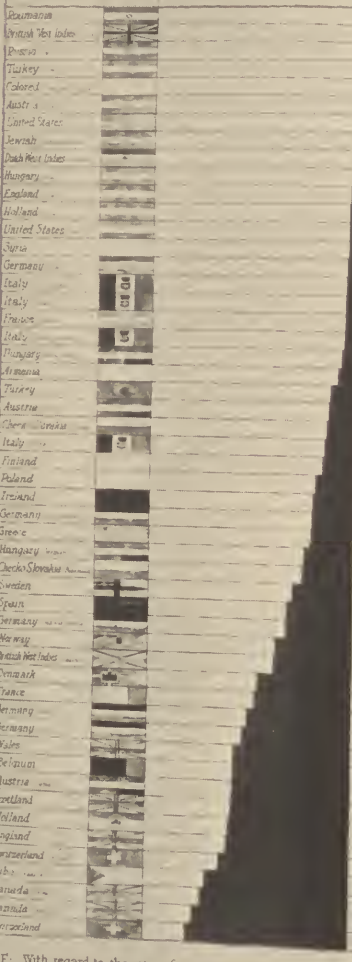
FIG. 11. INTERMARRIAGE OF NATIONALITIES IN NEW YORK CITY

Proportion of marriages among men and women in New York City who belong to different nationalities. Exhibit by Julius Drachsler, Smith College

CHART IV

Proportion of Intermarriage among Men and Women (1st and 2nd Generation) of Various Nationalities in New York City (1908-1912)

Note Figures for Jews and Negroes include third generation also



Nationality	Number of Intermarriages per 100 marriages	Number of Marriages	Number of Intermarriages
Roumania	45	2646	12
British West Indies	48	1666	8
Russia	62	37768	235
Turkey	80	371	3
Colored	93	6641	62
Austria	99	14032	139
United States	108	4784	52
Jewish	117	65199	763
Dutch West Indies	144	138	2
Hungary	224	4862	109
England	347	403	14
Holland	400	100	4
United States	426	1429	61
Syria	463	151	7
Germany	516	3486	180
Italy	558	13140	734
Italy	583	8411	491
France	654	91	6
Italy	676	23811	1615
Hungary	859	733	63
Armenia	963	166	16
Turkey	1315	228	30
Austria	1356	5197	705
Check-Slovakia	1409	3597	507
Italy	1673	2330	390
Finland	1682	850	143
Poland	2025	1896	384
Ireland	2159	18547	4005
Germany	2168	12724	3759
Greece	2214	560	124
Hungary	2441	1061	259
Check-Slovakia	2515	1451	365
Sweden	3104	2100	652
Spain	3311	311	103
Germany	3334	14979	4994
Norway	3914	700	274
British West Indies	3986	153	61
Denmark	4742	563	267
France	4955	1455	721
Germany	5305	933	495
Germany	5598	1322	740
Wales	5944	143	85
Belgium	5963	218	130
Austria	5971	988	590
Scotland	5979	1557	931
Holland	6258	294	184
England	6270	3614	2266
Switzerland	6632	686	455
Cuba	7373	99	73
Canada	7560	164	124
Canada	7985	705	563
Switzerland	8208	67	55

NOTE With regard to the ratio of intermarriage, the various nationalities range themselves in an ascending scale. Of the most important groups represented, the Jews and the Negroes are lowest, the Italians are next, the Irish are higher than the Italians and the Northern, North-Western and some Central European peoples are highest.

Fig. 12. Increase in Population in the United States Compared with European Countries

Bureau of the Census

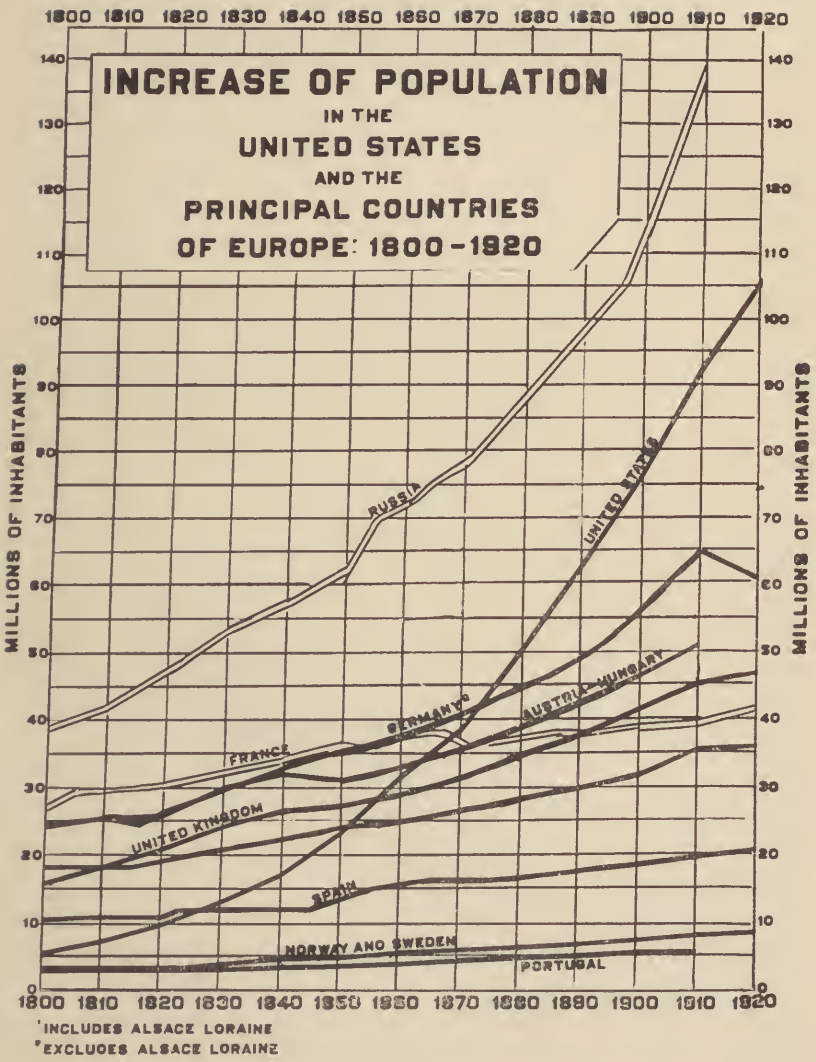
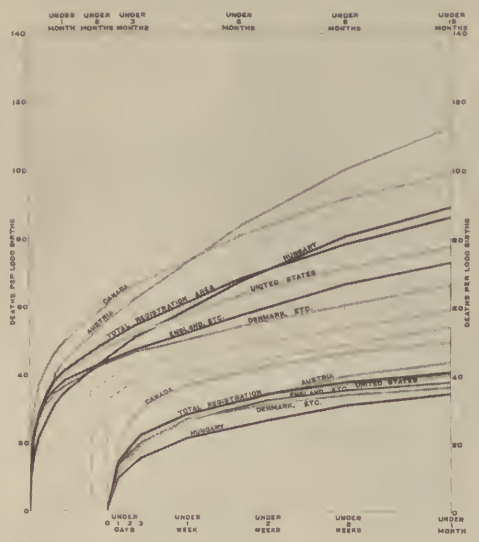

INCREASE OF POPULATION
IN THE
UNITED STATES
AND THE
PRINCIPAL COUNTRIES
OF EUROPE: 1800-1920
MILLIONS OF INHABITANTS
MILLIONS OF INHABITANTS
1800 1810 1820 1830 1840 1850 1860 1870 1880 1890 1900 1910 1920
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140
RUSSIA
UNITED STATES
GERMANY*
AUSTRIA-HUNGARY
FRANCE
UNITED KINGDOM
SPAIN
NORWAY AND SWEDEN
PORTUGAL
*INCLUDES ALSACE LORAINE
*EXCLUDES ALSACE LORAINE

Fig. 13. Infant Mortality in United States by Nationality of Mother

Infant mortality in registration area of United States by country of birth of mother; also by total registration area and total negro population. From Bureau of the Census.

INFANT MORTALITY
BY COUNTRY OF BIRTH OF MOTHER
IN THE REGISTRATION AREA - 1919



INFANT MORTALITY
BY COUNTRY OF BIRTH OF MOTHER
IN THE REGISTRATION AREA - 1919

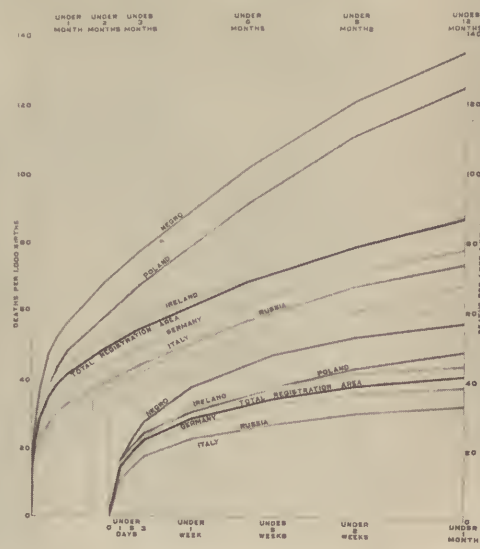


FIG. 14. HEREDITY OF LONGEVITY

Stereograms showing relation between age of father at death, age of mother at death, and longevity of offspring.

Upper series, left to right:

–20. Persons who died under twenty years. "The stereogram relates to 417 persons who died under twenty years of age. The figures show the percentage having fathers and mothers who died at ages specified. 8.9 per cent had parents who lived to be over eighty years of age."

20–40. Persons who died twenty to forty years of age. "The stereogram relates to 354 persons who died twenty to forty years of age. The figures show the percentage having fathers and mothers, who died at the ages specified. 4.8 per cent had parents who lived to be over eighty years of age."

40–60. "The stereogram relates to 351 persons who died forty to sixty years of age. The figures show the percentage having fathers and mothers who died at the ages specified. 8.1 per cent had parents who lived to be over eighty years of age."

Lower series:

60–80. "The stereogram relates to 333 persons who died sixty to eighty years of age. The figures show the percentage having fathers and mothers who died at ages specified. 18.0 per cent had parents who lived to be over eighty years of age."

80–100. "The stereogram relates to 138 persons who died eighty to one hundred years of age. The figures show the percentage having fathers and mothers who died at the ages specified. 27.5 per cent had parents who lived to be over eighty years of age."

Alexander Graham Bell.

Six Stereograms showing the relation between Age of Fathers at Death, Age of Mothers at Death and Longevity of Offspring.

Exhibited by Alexander Graham Bell

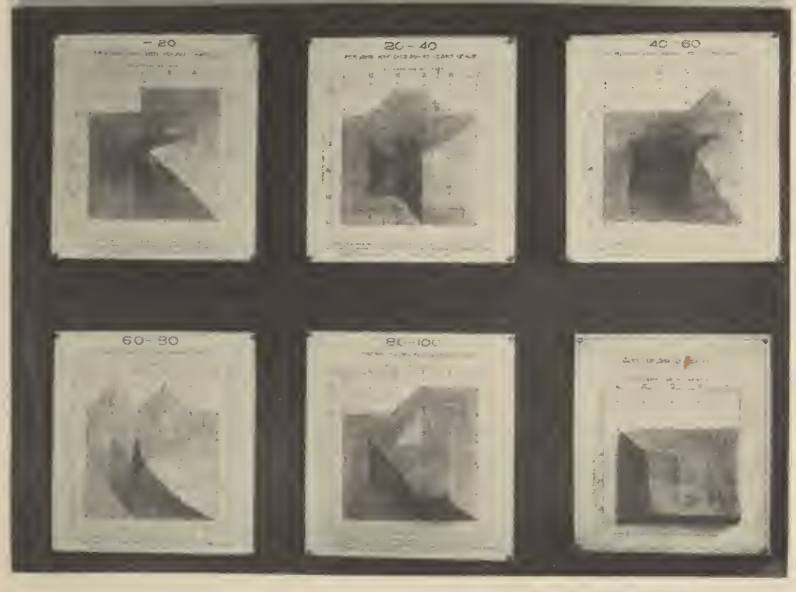


FIG. 15. MEASUREMENT OF PHYSICAL TRAITS

Methods of taking measurements, illustrated on a subject. Reading from left to right and from above down:

1. Vertex height. 2. Tragion. 3. Acromion. 4. Radiale. 5. Stylion. 6. Dactylion. 7. Suprasternale. 8. Tibiale. 9. Internal malleolus. 10. Anterior ilio-spinale. 11. Symphysion. 12. Cervicale. 13. Bicristal breadth. 14. Bitrochaner breadth. 15. Iliospinal breadth. 16. Chest breadth. 17. Antero-posterior chest diameter. 18. Sitting vertex height. 19. Sitting suprasternal height. 20. Head length. 21. Head breadth. 22. Tracing skull contours. 23. Measurement over a bathing suit.

Instruments made by Hermann, Zurich.

Pictures by Professor H. H. Wilder, Smith College.

At right, a scale for measuring stature in English and metric systems.

Iowa Child Welfare Research Station.

Fig. 16. Palm and Sole Prints and Their Inheritance

Left, above. Various sole prints of European-Americans.
Left, middle. Palm prints of mother and two sons. Diversity in one family.
Left, below. Father and son, the latter a complete duplicate of the former.

Four larger charts on right are prints "interpreted," i.e., covered with lines indicative of the individual conditions. These are of duplicate or "identical" twins,—that is, twins that have arisen from a single egg. The general character but not the minutiae are the same in both members of a set.

By Prof. H. H. Wilder, Smith College.

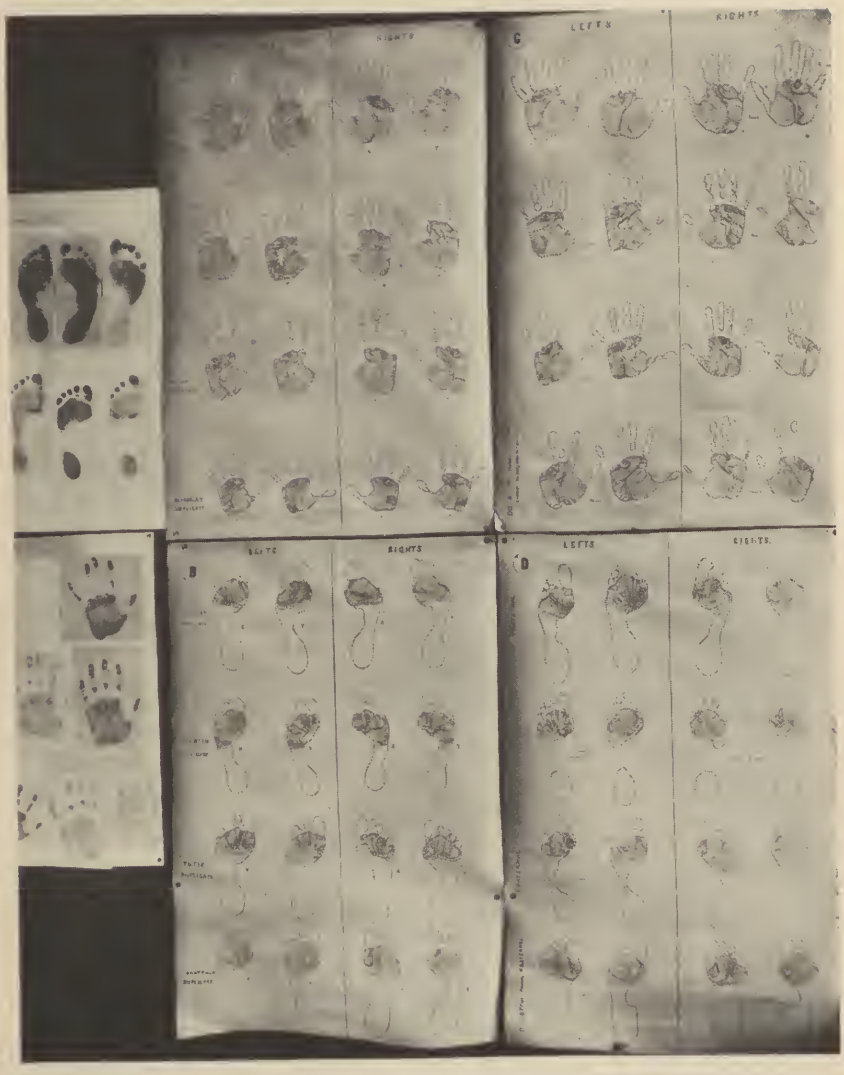

LEFTS
RIGHTS
C
LEFTS
RIGHTS
B
LEFTS
RIGHTS
D
LEFTS
RIGHTS

FIG. 17. MEASUREMENT OF PHYSICAL AND MENTAL TRAITS

Condensed guide to the Binet tests. Method of head measurement. From the Vineland (New Jersey) Training School

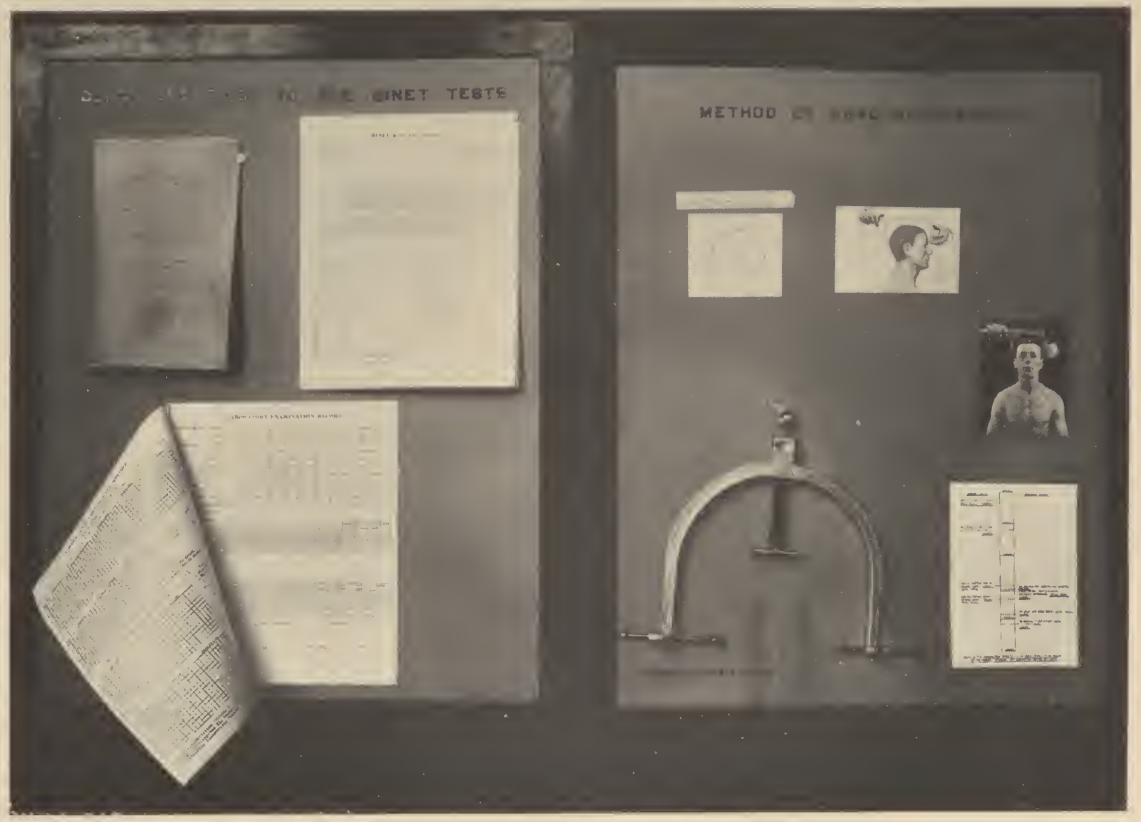

METHOD

FIG. 18. MEASUREMENT OF MENTAL TRAITS

Mental tests used at Vineland.
Training School at Vineland, New Jersey.

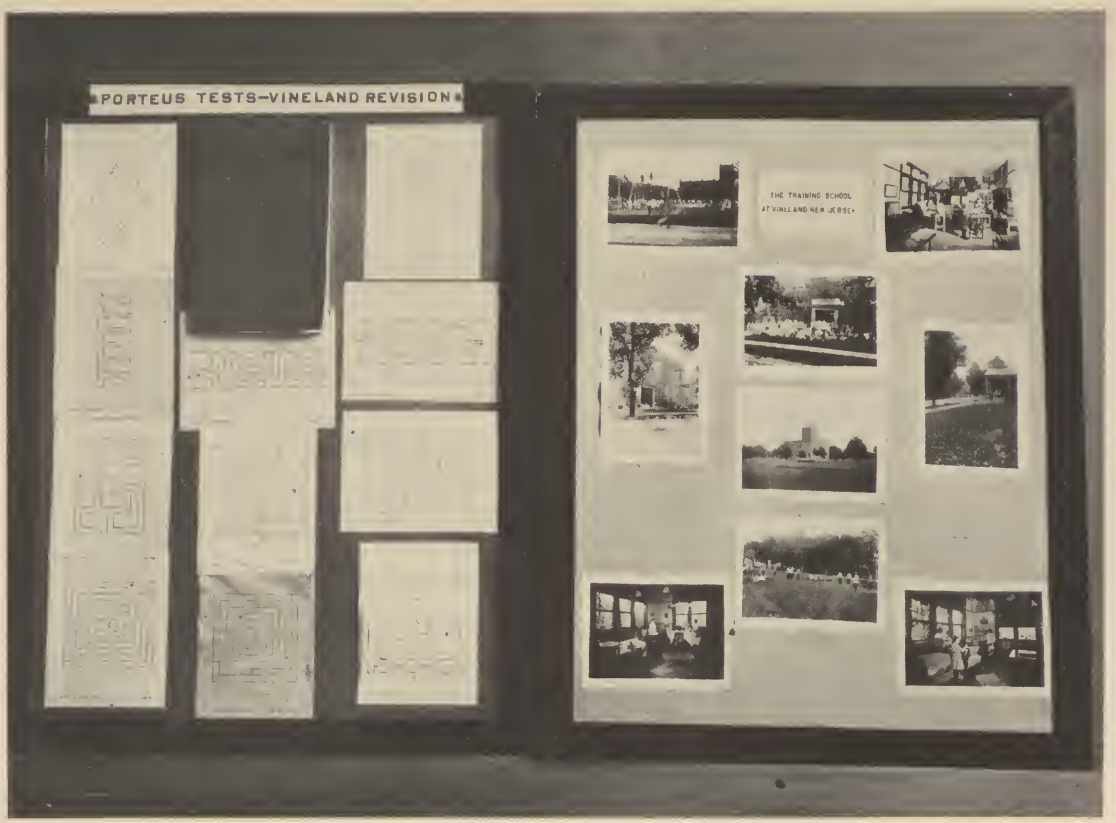

PORTEUS TESTS—VINELAND REVISION
THE TRAINING SCHOOL
AT VINELAND NEW JERSEY

Fig. 19. Heredity of Musical Ability

These charts, prepared by Dr. Hazel M. Stanton, Eastman School of Music, Rochester, N. Y., are representative of the results obtained in an investigation in the inheritance of specific musical capacities, which covered six family groups, in which one member of each group was known to be conspicuously talented in music. This investigation, initiated in the year 1920, is the beginning of the first research in heredity of talent based on quantitative measurements. Four of the Seashore Measures of Musical Talent, the sense of pitch, the sense of intensity, the senses of time and tonal memory were given individually to members of each family. These measurements were supplemented by qualitative information regarding individual case histories and musical experiences, the latter including musical environment during youth, musical training and education, musical activity, musical interests, and musical memory and imagination.

On each pedigree talent chart one mating and offspring are presented showing the results obtained in the musical measurements, also the ratings assigned for muscial experiences. The results of each of the four measurements are expressed graphically in terms of percentile rank ranging from 0 to 100. A rank of 98 to 100 is very superior, 90 to 97 is superior, 70 to 89 is excellent, 40 to 59 is average, 10 to 29 is poor. The sense of pitch is shown in the upper horizontal section of each individual chart, the sense of intensity in the second section, the sense of time in the third section, tonal memory in the lower section. The ratings of musical experiences are stated in terms of the letter *A*, high rating, the letter *C*, middle rating, and the letter *E*, low rating. At the side of each chart a brief description is given of the musical expression evinced by each individual charted.

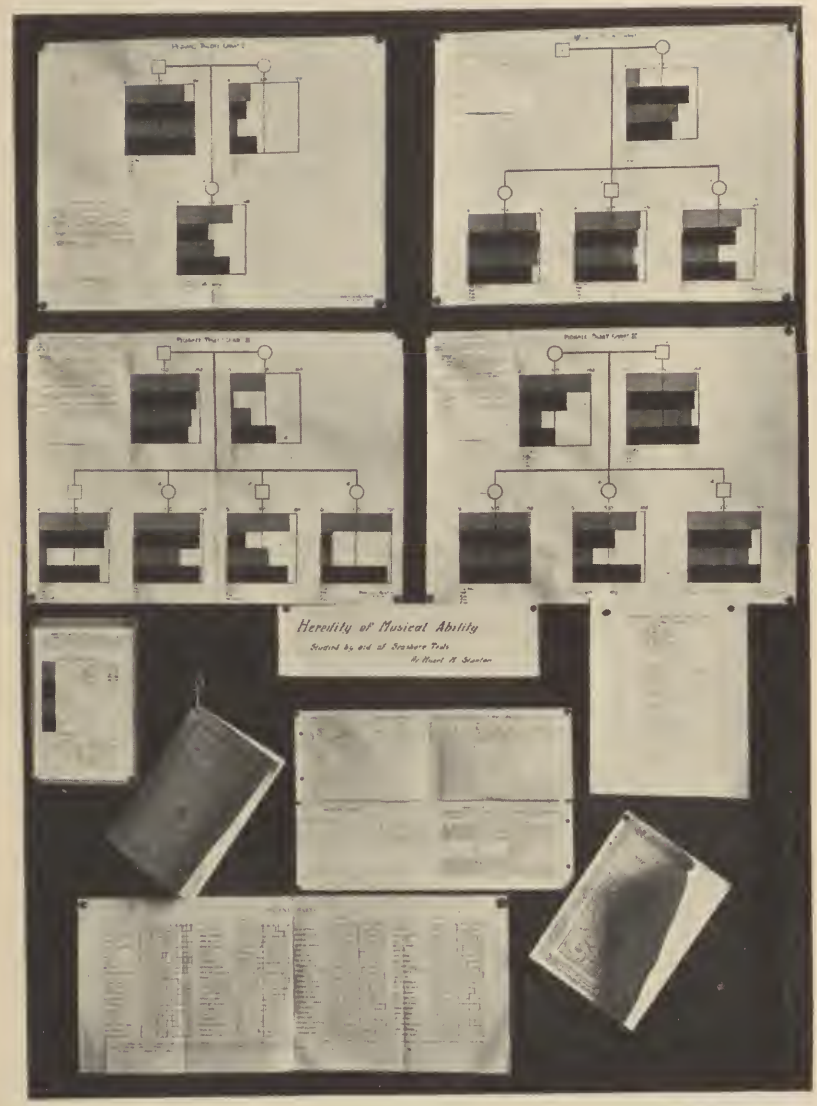
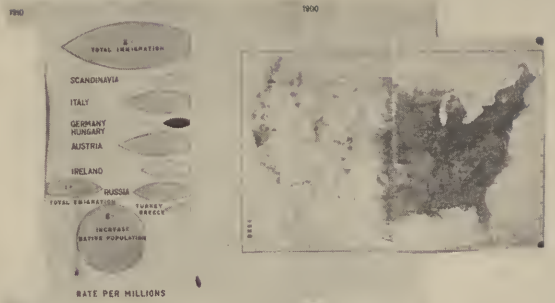

Heredity of Musical Ability

FIG. 20. GROWTH OF UNITED STATES POPULATION BY IMMIGRATION AND BY INCREASE IN NATIVE STOCK

Begin to read at the right hand, bottom. The maps show the gradual filling up of the country. The circles indicate relative increase in native population. To the same scale are drawn boat-shaped figures giving the relative total immigration and immigration from each country during the decade. Eugenics Record Office.

GROWTH OF U.S. POPULATION BY IMMIGRATION AND INCREASE IN NATIVE STOCK.



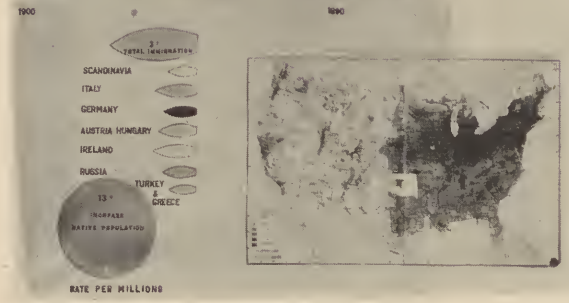


Fig. 20a.—(An Extension of Fig. 20)

1880
1870
TOTAL IMMIGRATION
SCANDINAVIA
ITALY
GERMANY
AUSTRIA HUNGARY
IRELAND
RUSSIA
10
INCREASE NATIVE POPULATION
RATE PER MILLIONS
1870
1860
TOTAL IMMIGRATION
SCANDINAVIA
GERMANY
IRELAND
INCREASE IN NATIVE POPULATION RATE PER MILLIONS
1860
1850
TOTAL IMMIGRATION INTO U.S.
GERMANY
IRELAND
INCREASE IN NATIVE POPULATION RATE PER MILLIONS
1850
1840
TOTAL IMMIGRATION INTO U.S.
GERMANY
IRELAND
INCREASE IN NATIVE POPULATION RATE PER MILLIONS
1840
1830
TOTAL IMMIGRATION
GERMANY
IRELAND
INCREASE IN NATIVE POPULATION RATE PER MILLIONS
1830
1820
TOTAL IMMIGRATION INTO U.S.
INCREASE IN NATIVE POPULATION RATE PER MILLIONS
1820
1810
INCREASE IN NATIVE POPULATION
1810
1800
INCREASE IN NATIVE POPULATION
MILLIONS
1800
1790
INCREASE IN NATIVE POPULATION

Fig. 21. Immigration into the United States from Different Countries

From Report of the Commissioner of Immigration

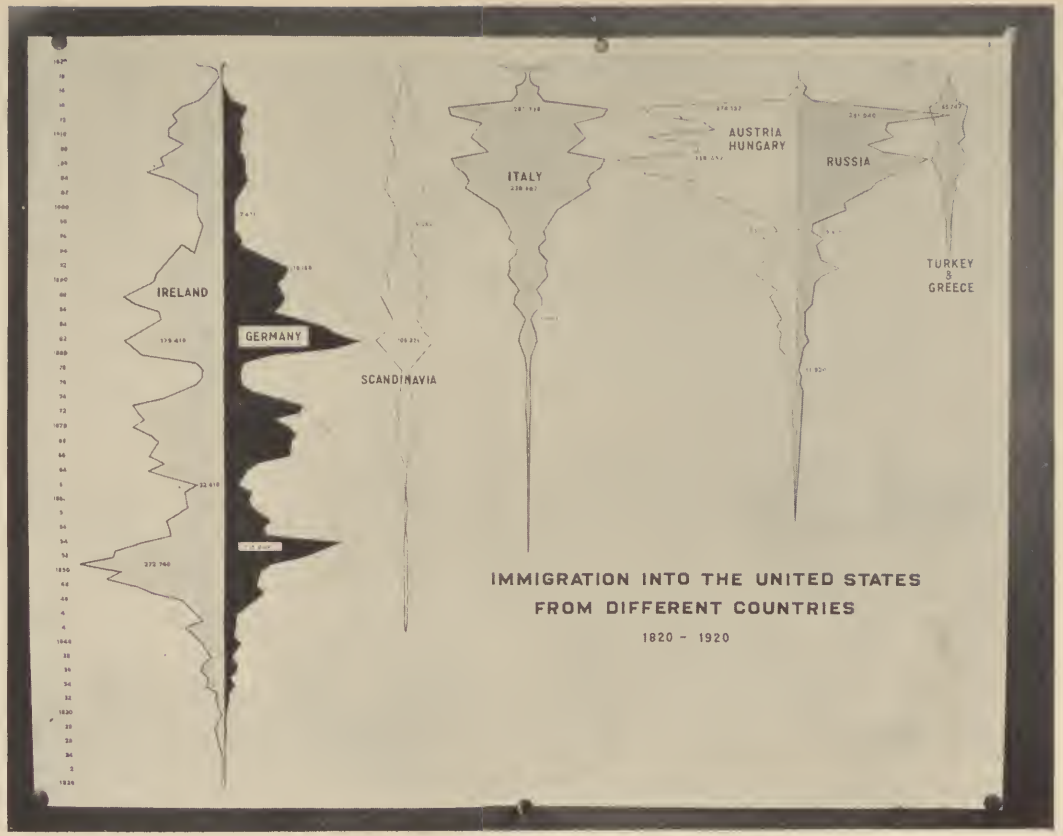
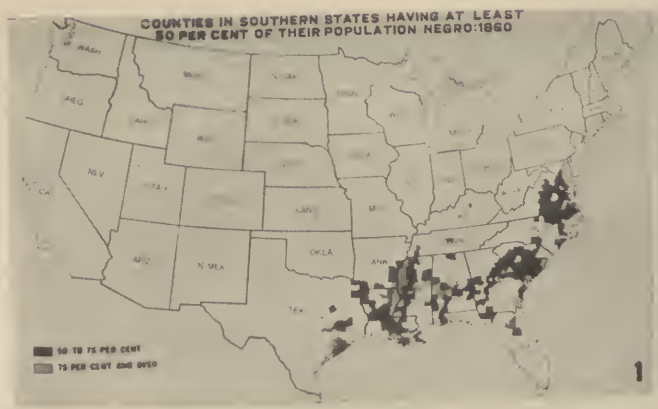
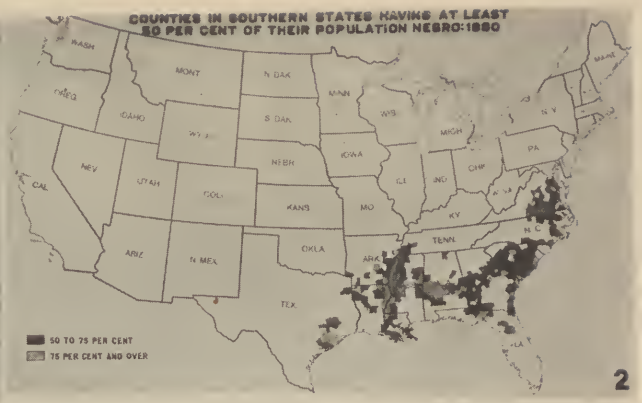
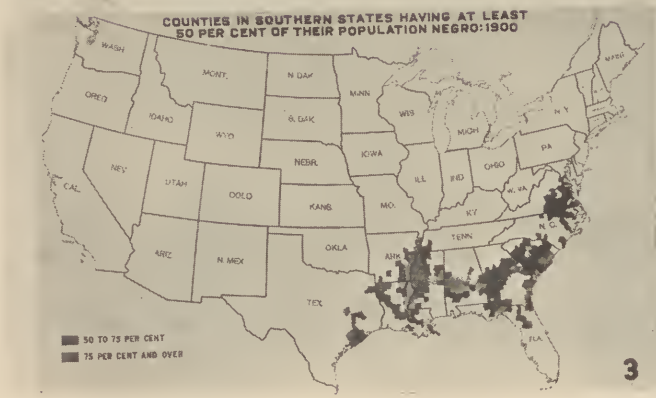

IRELAND
GERMANY
SCANDINAVIA
ITALY
AUSTRIA
HUNGARY
RUSSIA
TURKEY
&
GREECE
IMMIGRATION INTO THE UNITED STATES
FROM DIFFERENT COUNTRIES
1820 - 1920

Fig. 22. Fluctuation in Distribution of Counties in the United States with at Least 50 per cent Negro, 1860–1920

From Tuskegee Institute. Monroe N. Work


COUNTIES IN SOUTHERN STATES HAVING AT LEAST
50 PER CENT OF THEIR POPULATION NEGRO: 1860
50 TO 75 PER CENT
75 PER CENT AND OVER
1


COUNTIES IN SOUTHERN STATES HAVING AT LEAST
50 PER CENT OF THEIR POPULATION NEGRO: 1880
50 TO 75 PER CENT
75 PER CENT AND OVER
2


COUNTIES IN SOUTHERN STATES HAVING AT LEAST
50 PER CENT OF THEIR POPULATION NEGRO: 1900
50 TO 75 PER CENT
75 PER CENT AND OVER
3

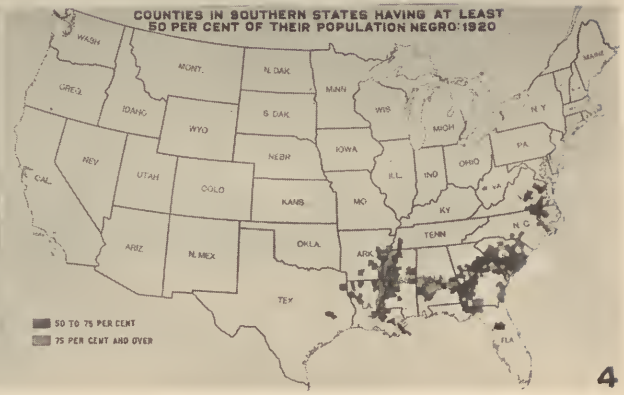

COUNTIES IN SOUTHERN STATES HAVING AT LEAST
50 PER CENT OF THEIR POPULATION NEGRO: 1920
50 TO 75 PER CENT
75 PER CENT AND OVER
4

Fig. 23. Inheritance of Specific Iso-agglutinins in the Human Blood

The blood serum of certain persons will cause the red blood corpuscles of certain others to stick together (agglutinate) in clumps. Four human blood groups are recognized (I–IV). Their properties are described in the lower right hand chart.

Prepared by Dr. F. L. Reichert, Johns Hopkins University.

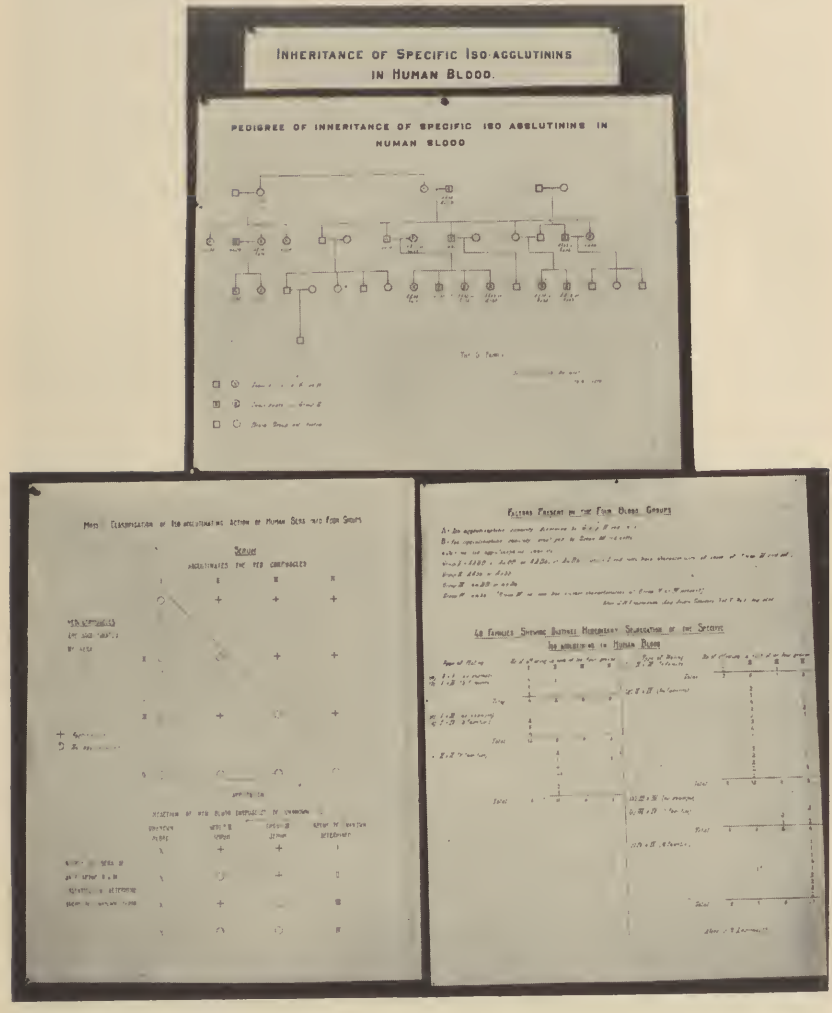

INHERITANCE OF SPECIFIC ISO-AGGLUTININS
IN HUMAN BLOOD.
PEDIGREE OF INHERITANCE OF SPECIFIC ISO AGGLUTININS IN
HUMAN BLOOD

Fig. 24. Comparison of White and Negro Fetuses

An exhibit prepared by Dr. A. H. Schultz of the Department of Embryology, Carnegie Institution of Washington, deals with racial differences during prenatal development of man. It is based upon researches on 455 white and 168 negro fetuses ranging in age from the ninth to the fortieth week of intrauterine life. Fourteen plaster casts of white and negro specimens and ten large tables illustrate the chief points of difference in fetuses of the two races and in which periods of development they are most distinct. Of these differences the following may be enumerated:

The average of the upper arm-forearm index for every week of fetal life is larger in the negro than in the white, showing that the forearm in relation to the upper arm is longer in negro fetuses. In an analogous way the leg in relation to the thigh was found to be longer in negro fetuses, a difference which becomes more pronounced with advancing development. The hand as well as the foot is slightly shorter and broader in white fetuses. In the latter, fingers II and IV are of equal length in the great percentage of cases and frequently finger II is even longer than finger IV; while in the negro the relation in length between these two fingers is more often in favor of finger IV and the latter is never shorter than finger II. The length of the thumb in relation to the total hand length is shorter in the negro, a difference which is constant and rather marked throughout intrauterine development. The first toe is the longest in a greater percentage of white than of negro fetuses, while the second toe is longest in a greater percentage in the negro. In the latter race the heel is more prominent than in the white. The trunk shows no racial differences. Of the head, the brain part is proportionately smaller and the face part larger, particularly in height, in negro fetuses. The nose is relatively shorter and broader in negro fetuses in all stages of development, causing a very marked difference in the nasal index of the two races. During the later part of pregnancy the nostrils are directed transversely in the negro and sagittally in the white. The lips are much thicker in negro fetuses.

24 White.
2600. Negro

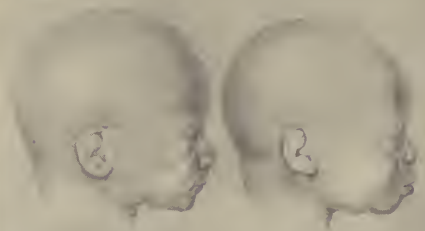
Fig. 25. Difference Between White and Negro Fetuses

BASED UPON OBSERVATIONS ON 455 WHITE AND 166 NEGRO SPECIMENS RANGING FROM THE 9th TO THE 40th WEEK OF PRENATAL DEVELOPMENT.

DR. ADOLPH H. SCHULTZ. CARNEGIE INSTITUTION OF WASHINGTON, DEPT. OF EMBRYOLOGY

TABLE 6

DIFFERENCES BETWEEN THE HEADS OF WHITE AND NEGRO FETUSES



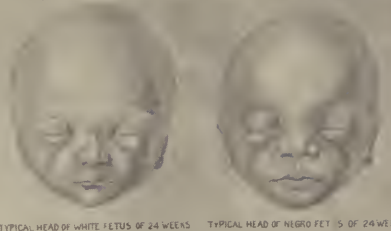
TYPICAL HEAD OF WHITE FETUS OF 24 WEEKS x4

TYPICAL HEAD OF NEGRO FETUS OF 24 WEEKS x4

BRAIN-PART OF HEAD SMALLER, FACE-PART LARGER, AND NOSE SHORTER AND FLATTER IN THE NEGRO

TABLE 7

DIFFERENCES BETWEEN THE HEADS OF WHITE AND NEGRO FETUSES



TYPICAL HEAD OF WHITE FETUS OF 24 WEEKS x4

TYPICAL HEAD OF NEGRO FETUS OF 24 WEEKS x4

FACE HIGHER, NOSE BROADER, AND LIPS THICKER IN THE NEGRO. NOSTRILS DIRECTED TRANSVERSELY IN THE NEGRO, AND SAGITTALLY IN THE WHITE

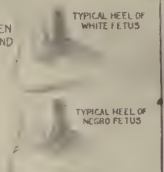
TABLE 4

DIFFERENCES BETWEEN THE FEET OF WHITE AND NEGRO FETUSES

TYPICAL FOOT OF WHITE FETUS OF 30 WEEKS X4

TYPICAL FOOT OF NEGRO FETUS OF 30 WEEKS X4

FOOT OF NEGRO FETUS SLIGHTLY LONGER AND NARROWER THAN THAT OF WHITE FETUS



TYPICAL HEEL OF WHITE FETUS

TYPICAL HEEL OF NEGRO FETUS

NOTE THE GREATER PROMINENCE OF HEEL IN NEGRO FETUS

LONGEST TOE

	3d MONTH		4th MONTH		5th MONTH		6th MONTH		7th MONTH		8th MONTH		9th MONTH		10th MONTH	
	WHITE	NEGRO	WH.	N	WH.	N	WH.	N	WH.	N	WH.	N	WH.	N	WH.	N
I	—	—	17.1	5.5	15.5	5.9	22.7	10.0	39.4	11.7	53.3	22.2	53.4	25.0	77.3	50.0
I & II	3.9		43.4	5.5	44.0	20.6	39.4	35.0	36.4	47.1	26.7	44.5	33.3	40.0	13.6	18.2
II	90.2	100.0	39.5	89.0	40.5	73.5	37.9	55.0	24.2	41.2	20.0	33.3	13.3	35.0	9.1	31.8
I & II	5.9	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

TABLE SHOWING WHICH TOE IS LONGEST IN THE VARIOUS MONTHS OF PREGNANCY, EXPRESSED IN PERCENTAGES OF CASES

TABLE 3.

DIFFERENCES BETWEEN THE HANDS OF WHITE AND NEGRO FETUSES

TYPICAL HAND OF WHITE FETUS OF 30 WEEKS x5

TYPICAL HAND OF NEGRO FETUS OF 30 WEEKS x5

THE HAND IS RELATIVELY BROADER AND SLIGHTLY SHORTER AND THE THUMB RELATIVELY LONGER IN THE WHITE FETUS THAN IN THE NEGRO FETUS (SEE RELATIVE LENGTH OF THUMB ON TABLE 5).

FINGERS II & IV	3d MONTH		4th MONTH		5th MONTH		6th MONTH		7th MONTH		8th MONTH		9th MONTH		10th MONTH	
	WHITE	NEGRO	WH.	N	WH.	N	WH.	N	WH.	N	WH.	N	WH.	N	WH.	N
IV > II	33.3	57.1	14.7	5.0	0.0	14.3	4.7.1	10.4	4.5.0	21.2	52.9	20.0	55.6	33.3	63.2	31.8	54.6
IV = II	64.7	42.9	69.0	50.0	64.3	52.9	74.6	55.0	66.7	47.1	66.7	44.4	53.4	36.8	54.6	45.4
IV < II	2.0	—	16.3	—	21.4	—	15.0	—	12.1	—	3.3	—	3.3	—	13.6	—

TABLE SHOWING RELATION IN LENGTH BETWEEN FINGERS II & IV IN THE VARIOUS MONTHS OF PREGNANCY, EXPRESSED IN PERCENTAGES OF CASES

FIG. 26. THE CATLIN MARK

Inheritance of an unusual opening in the parietal bones. By Dr. William M. Goldsmith, Professor of Biology, Southwestern College, Winfield, Kansas.

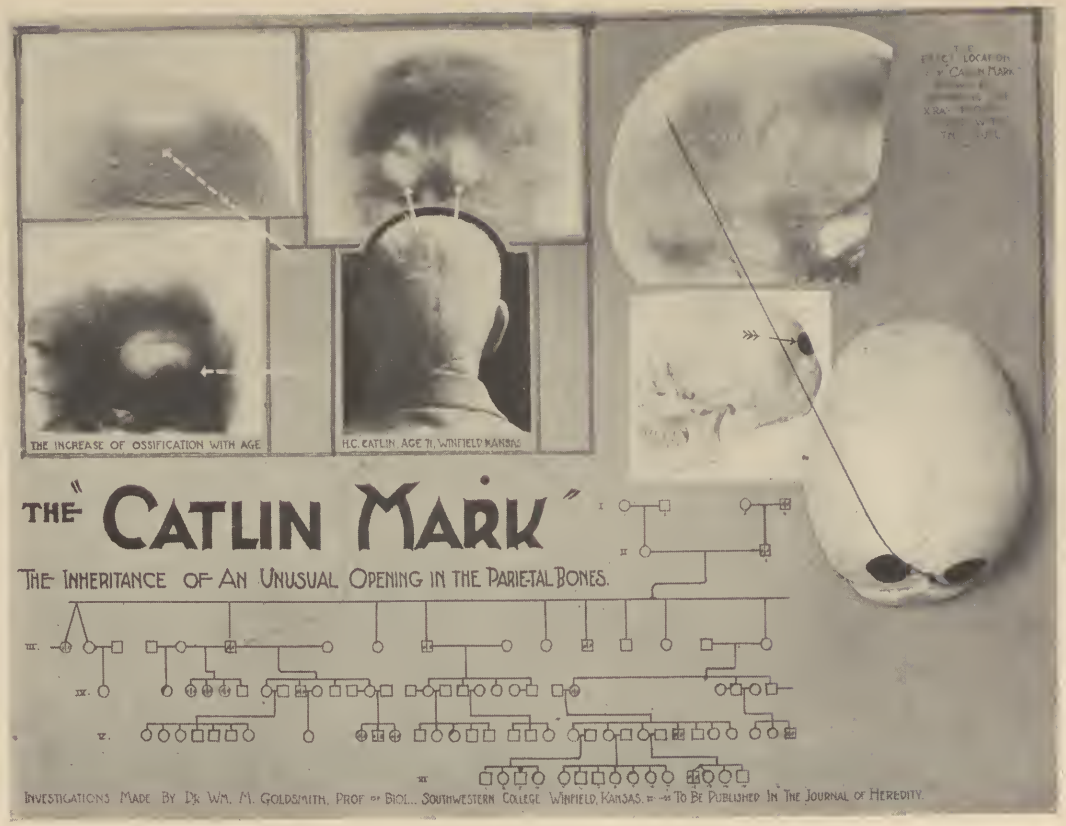

THE INCREASE OF OSSIFICATION WITH AGE
H.C. CATLIN. AGE 71. WINFIELD KANSAS
THE "CATLIN MARK"
THE INHERITANCE OF AN UNUSUAL OPENING IN THE PARIETAL BONES.
INVESTIGATIONS MADE BY DR. WM. M. GOLDSMITH, PROF. OF BIOL., SOUTHWESTERN COLLEGE, WINFIELD, KANSAS. — TO BE PUBLISHED IN THE JOURNAL OF HEREDITY.

FIG. 27. INHERITANCE OF ORDER OF SUCCESSION IN DEVELOPMENT OF THE CARPAL BONES

Charts showing, for children of each of three families, the order of succession of development of the carpal bones, of the wrist. The X-ray photographs were furnished by Dr. Prior of Lexington, Ky. The outline diagrams show the order of development of the bones in each individual. Eugenics Record Office.

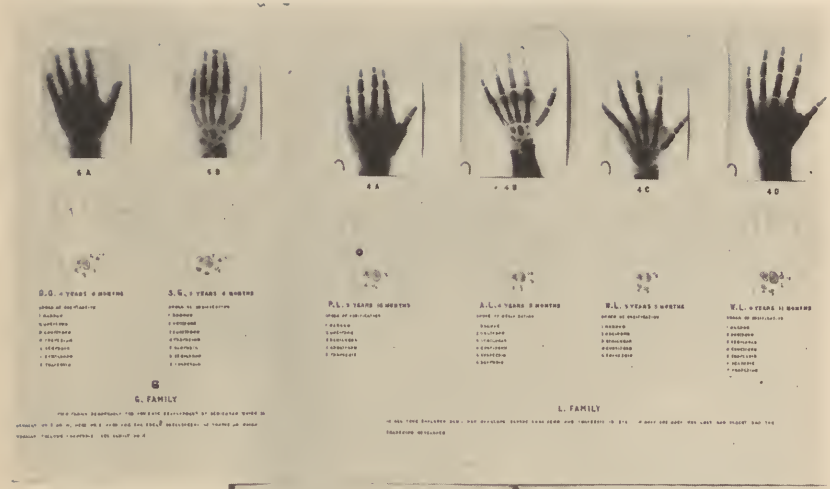


FIG. 28. HEREDITY OF HARELIP AND CLEFT PALATE

Pedigree charts.

Upper: Three families showing harelip inherited without cleft palate.

Lower: Three families showing harelip and cleft palate, often both defects in one individual. Eugenics Record Office.

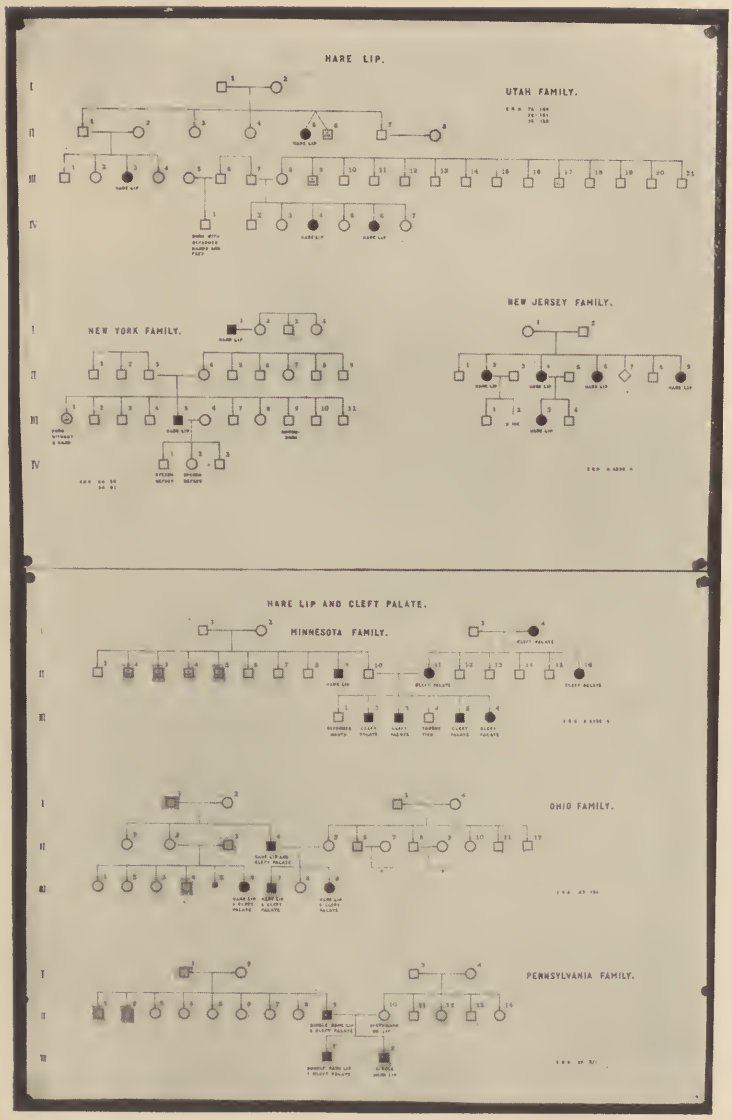
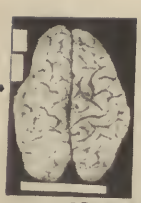

HARE LIP.
UTAH FAMILY.
NEW YORK FAMILY.
NEW JERSEY FAMILY.
HARE LIP AND CLEFT PALATE.
MINNESOTA FAMILY.
OHIO FAMILY.
PENNSYLVANIA FAMILY.

FIG. 29. THE BRAINS OF CRIMINALS

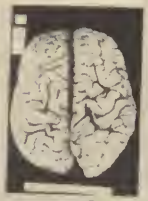
Photographs of criminal brains, showing great variety of forms. Part of exhibit of Massachusetts Department of Mental Diseases, by Dr. Myrtelle M. Canavan.

MASSACHUSETTS
DEPARTMENT
OF
MENTAL DISEASES
EXHIBITS
PICTURES OF 50
CRIMINAL BRAINS



CRIMINAL

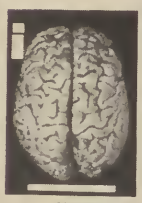
576. ALCOHOLIC VAGRANT.
BRAIN NARROW, SIMPLE.
WT. 1550.
MOTHER DIED INSANE.
CANADIAN.



CRIMINAL

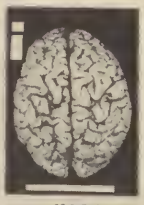
590. SEX PERVERT, VAGRANT.
BRAIN BROAD SHORT ANOMALOUS.
WT. 1400.
GOITER.
PARENTS UNKNOWN.
AMERICAN.

41

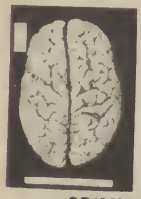


NORMAL

42

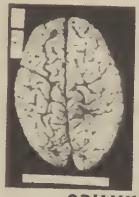


NORMAL



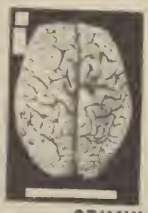
CRIMINAL

954. RAPE.
BRAIN LONG, UNEVEN.
WT. 1230.
PARENTS UNKNOWN.
AMERICAN.



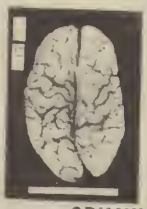
CRIMINAL

585. ALCOHOLIC VAGRANT.
BRAIN LONG, SIMPLE.
WT. 1230.
PARENTS UNKNOWN.
CANADIAN.



CRIMINAL

553. VAGRANT.
BRAIN LONG SQUARE ENDED SIMPLE
WT. 1370.
PARENTS AND SIBLINGS NORMAL.
IRISH.



CRIMINAL

788. PARETIC VAGRANT.
BRAIN LONG NARROW UNEQUAL.
ATROPHIC. WT. 1200.
PARENTS UNKNOWN.
ITALIAN.

FIG. 30. RACIAL DIFFERENCES IN MENTAL FATIGUE

Charts showing comparative mental fatigue in Indian, White and Negro children. Shown by Dr. Thos. R. Garth

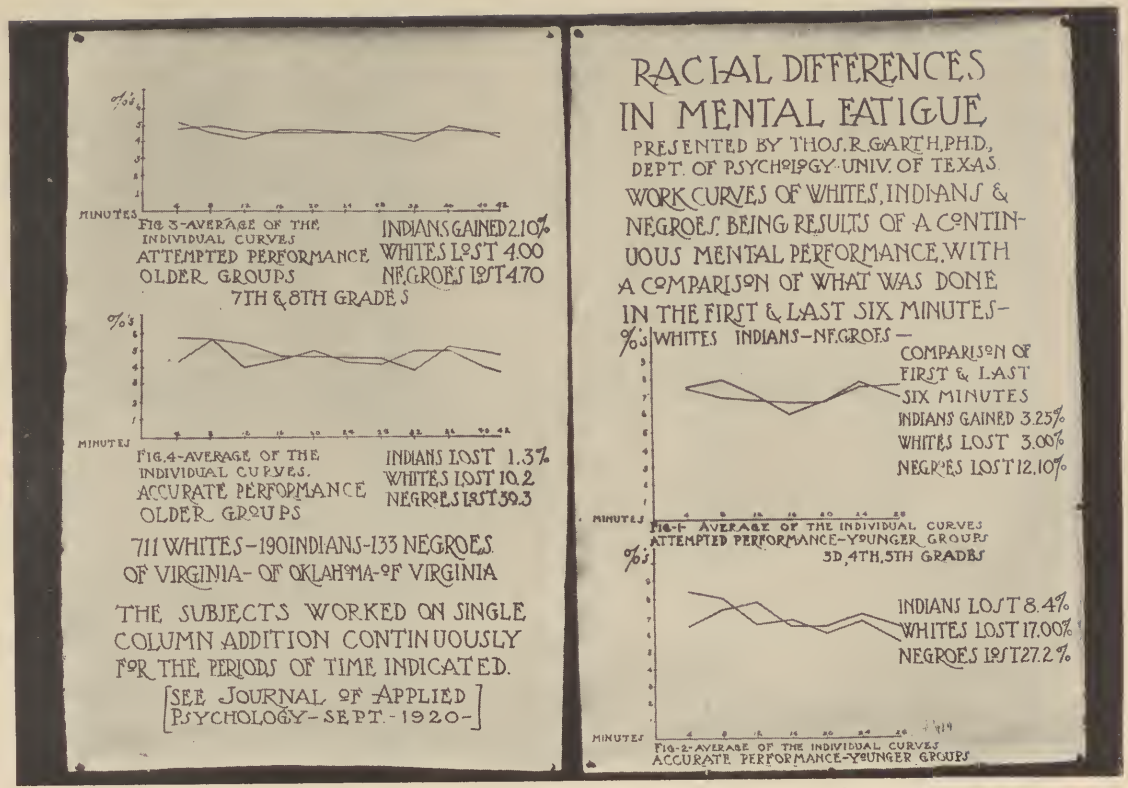

%'s
MINUTES
FIG 3-AVERAGE OF THE INDIVIDUAL CURVES
ATTEMPTED PERFORMANCE
OLDER GROUPS
7TH & 8TH GRADES
INDIANS GAINED 2.10%
WHITES LOST 4.00
NEGROES LOST 4.70
%'s
MINUTES
FIG.4-AVERAGE OF THE INDIVIDUAL CURVES.
ACCURATE PERFORMANCE
OLDER GROUPS
INDIANS LOST 1.3%
WHITES LOST 10.2
NEGROES LOST 39.3
711 WHITES-190 INDIANS-133 NEGROES.
OF VIRGINIA- OF OKLAHOMA-OF VIRGINIA
THE SUBJECTS WORKED ON SINGLE COLUMN ADDITION CONTINUOUSLY FOR THE PERIODS OF TIME INDICATED.
[SEE JOURNAL OF APPLIED PSYCHOLOGY-SEPT.-1920-]
RACIAL DIFFERENCES IN MENTAL FATIGUE
PRESENTED BY THOS. R. GARTH, PH.D.,
DEPT. OF PSYCHOLOGY-UNIV. OF TEXAS.
WORK CURVES OF WHITES, INDIANS & NEGROES. BEING RESULTS OF A CONTINUOUS MENTAL PERFORMANCE. WITH A COMPARISON OF WHAT WAS DONE IN THE FIRST & LAST SIX MINUTES-
%'s
WHITES INDIANS-NEGROES-
COMPARISON OF FIRST & LAST SIX MINUTES
INDIANS GAINED 3.25%
WHITES LOST 3.00%
NEGROES LOST 12.10%
MINUTES
FIG-1- AVERAGE OF THE INDIVIDUAL CURVES
ATTEMPTED PERFORMANCE-YOUNGER GROUPS
3D, 4TH, 5TH GRADES
%'s
INDIANS LOST 8.4%
WHITES LOST 17.00%
NEGROES LOST 27.2%
MINUTES
FIG-2-AVERAGE OF THE INDIVIDUAL CURVES
ACCURATE PERFORMANCE-YOUNGER GROUPS

FIG. 31. HEREDITY IN EPILEPSY

Six charts illustrating inheritance of epilepsy. In all charts: *A*, alcoholic; *E*, epileptic; *F*, feebleminded; *I*, insane; *Ne*, neurotic; *S*, syphilitic; *Sx*, sex offender; *W*, nomadic; squares, males; circles, females. Black symbols, defective individuals.

Dr. David F. Weeks, Skillman (New Jersey) Village for Epileptics.

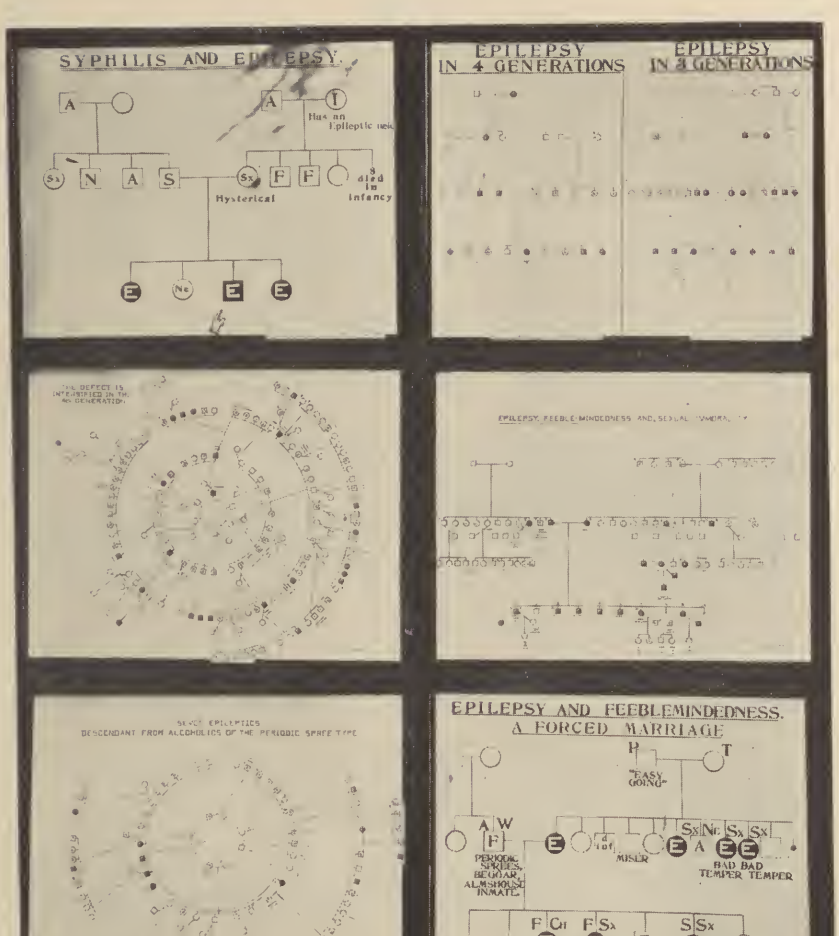

SYPHILIS AND EPILEPSY.
Has an Epileptic neic
Hysterical
died in infancy
EPILEPSY IN 4 GENERATIONS
EPILEPSY IN 3 GENERATIONS
EPILEPSY, FEEBLE-MINDEDNESS AND SEXUAL
SEXUAL EPILEPTICS
DESCENDANT FROM ALCOHOLICS OF THE PERIODIC SPREE TYPE
EPILEPSY AND FEEBLEMINDEDNESS.
A FORCED MARRIAGE
"EASY GOING"
PERIODIC SPREES, BEGGAR, ALMSHOUSE INMATE.
MISER
BAD BAD TEMPER TEMPER
INFANTILE CONVULSIONS FAINT. SPELLS

FIG. 32. MENTALITY AND DELINQUENCY

Relation of illegitimacy to parental mentality and infant mortality, also of delinquency to mentality. Children's Bureau, U. S. Department of Labor.

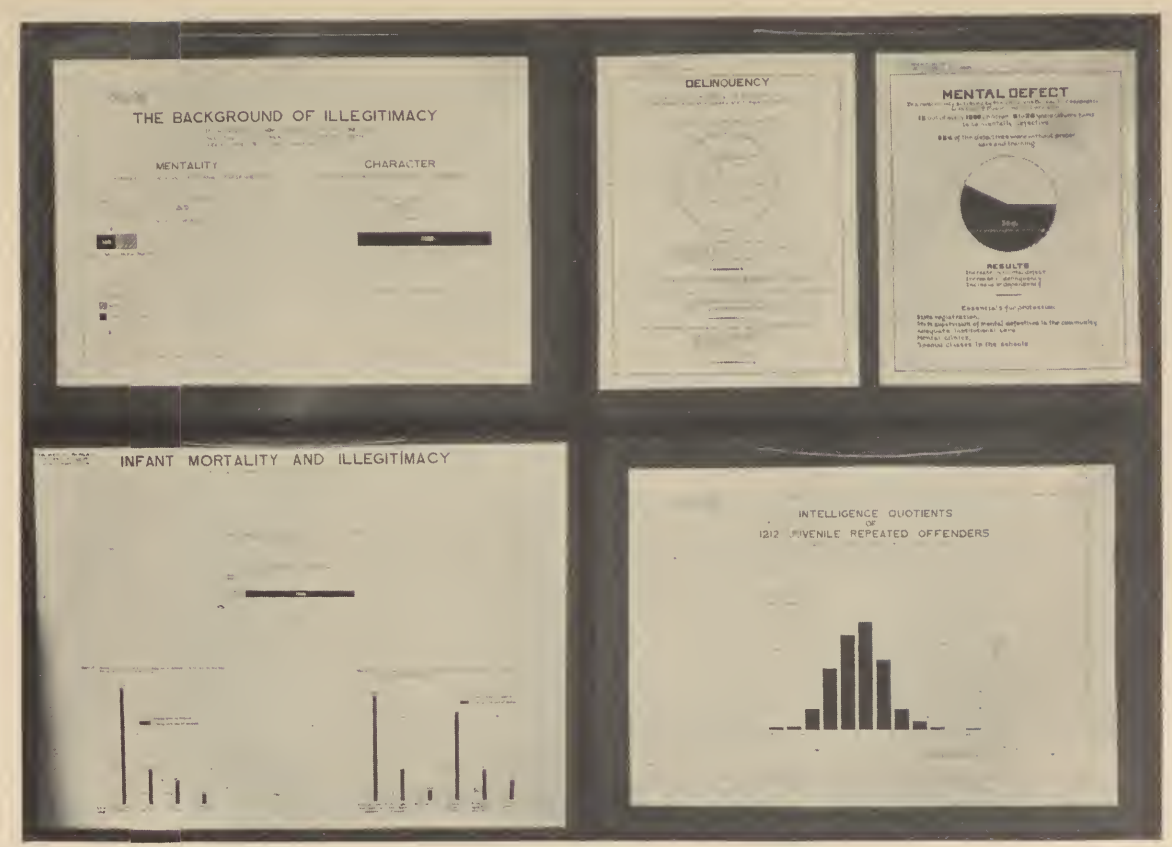
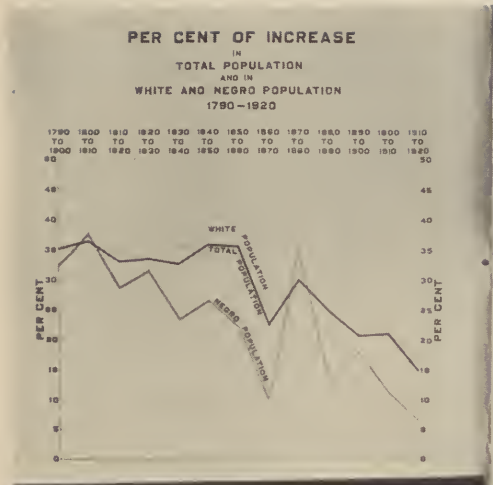
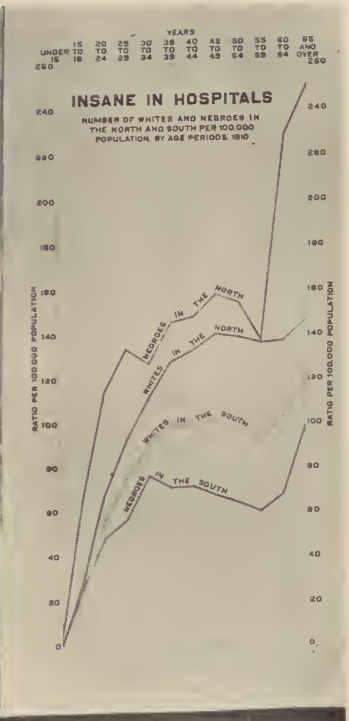

THE BACKGROUND OF ILLEGITIMACY
MENTALITY
CHARACTER
DELINQUENCY
MENTAL DEFECT
RESULTS
INFANT MORTALITY AND ILLEGITIMACY
INTELLIGENCE QUOTIENTS
OF
1212 JUVENILE REPEATED OFFENDERS

Fig. 33. Increase in United States of Whites and Negroes, Both in Total and Insane Population. Also Growth of Urban Population

Three diagrams: (1) The percentage increase in the total white population and in the white and negro population, separately, 1790–1920. (2) Proportion of population insane in hospitals, for Northern and Southern States and for whites and negroes separately. (3) Growth of urban population of the United States. Bureau of the Census


PER CENT OF INCREASE
IN
TOTAL POPULATION
AND IN
WHITE AND NEGRO POPULATION
1790–1920
1790 TO 1800
1800 TO 1810
1810 TO 1820
1820 TO 1830
1830 TO 1840
1840 TO 1850
1850 TO 1860
1860 TO 1870
1870 TO 1880
1880 TO 1890
1890 TO 1900
1900 TO 1910
1910 TO 1920
PER CENT
WHITE POPULATION
TOTAL POPULATION
NEGRO POPULATION


YEARS
UNDER 15
15 TO 19
20 TO 24
25 TO 29
30 TO 34
35 TO 39
40 TO 44
45 TO 49
50 TO 54
55 TO 59
60 TO 64
65 AND OVER
INSANE IN HOSPITALS
NUMBER OF WHITES AND NEGROES IN THE NORTH AND SOUTH PER 100,000 POPULATION, BY AGE PERIODS, 1910
RATIO PER 100,000 POPULATION
NEGROES IN THE NORTH
WHITES IN THE NORTH
WHITES IN THE SOUTH
NEGROES IN THE SOUTH

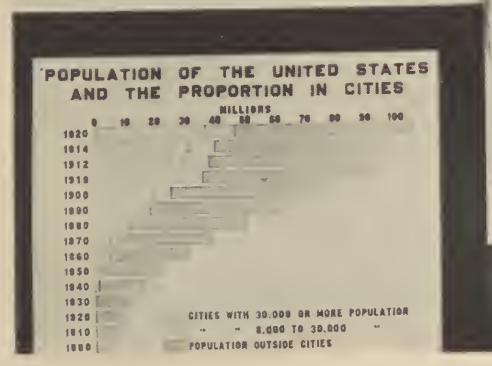

POPULATION OF THE UNITED STATES AND THE PROPORTION IN CITIES
MILLIONS
1920
1910
1900
1890
1880
1870
1860
1850
1840
1830
1820
1810
1800
CITIES WITH 30,000 OR MORE POPULATION
" " 8,000 TO 30,000 "
POPULATION OUTSIDE CITIES

Fig. 34. New York State Commission for Mental Defectives, and Its Extra-Institutional Care

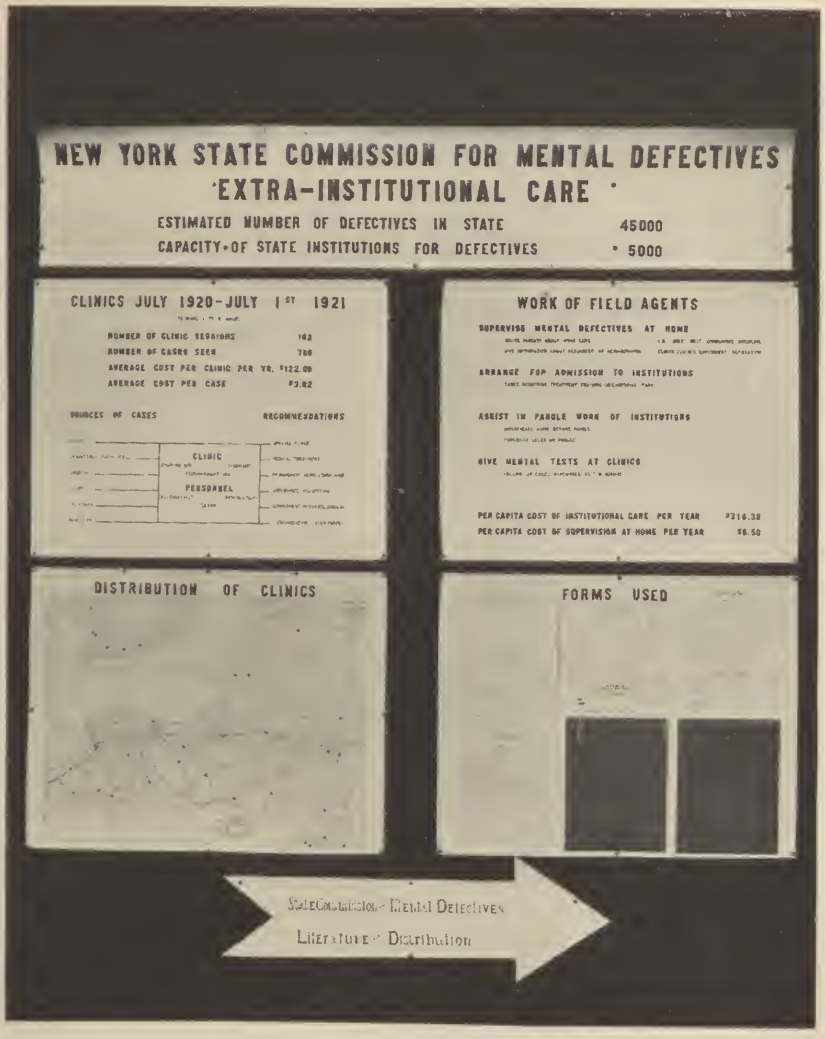

NEW YORK STATE COMMISSION FOR MENTAL DEFECTIVES
EXTRA-INSTITUTIONAL CARE
ESTIMATED NUMBER OF DEFECTIVES IN STATE 45000
CAPACITY OF STATE INSTITUTIONS FOR DEFECTIVES 5000
CLINICS JULY 1920-JULY 1ST 1921
NUMBER OF CLINIC SESSIONS 103
NUMBER OF CASES SEEN 786
AVERAGE COST PER CLINIC PER YR. $122.09
AVERAGE COST PER CASE $3.82
SOURCES OF CASES
RECOMMENDATIONS
CLINIC
PERSONNEL
WORK OF FIELD AGENTS
SUPERVISE MENTAL DEFECTIVES AT HOME
ARRANGE FOR ADMISSION TO INSTITUTIONS
ASSIST IN PAROLE WORK OF INSTITUTIONS
GIVE MENTAL TESTS AT CLINICS
PER CAPITA COST OF INSTITUTIONAL CARE PER YEAR $216.38
PER CAPITA COST OF SUPERVISION AT HOME PER YEAR 56.50
DISTRIBUTION OF CLINICS
FORMS USED
STATE COMMISSION FOR MENTAL DEFECTIVES
LITERATURE DISTRIBUTION

FIG. 35. COMPOSITE PORTRAITURE

Composite photographs largely made by the late Henry P. Bowditch of Boston.

First row: Left upper: 60 Wellesley College students. Left lower: Class of '87, Vassar College. 12 Wends and composite. 12 Portland (Me.) physicians and composite. 12 Saxons and composite.

Second row: College men from Harvard, Amherst, 449 components. Co-composite, Harvard Annex, Smith, etc., 287 components. Harvard Class of 1887, 156 members. 12 Horse-car drivers. General paresis, 8 components (5 men and 3 women), 11 Mathematicians. Amherst Class of 1887, 71 components. Williams College, 57 components. 16 Naturalists.

Third row: Women's Medical College, 1887, 38 components. Component three members of Bowditch family. 12 Boston Doctors and composite. Mt. Holyoke class of 1887, 47 components. Harvard Annex, 1887, 47 components. Smith, 1887, 38 components.

Fourth row: Horse-car conductors, 12 components. Sheffield Scientific School, Class of 1887. Cornell, 1887, 65 men, 5 women. 30 Members of the National Academy of Science. Melancholia, 8 components. Harvard Faculty, 1887, 38 components.

Bottom row: Upper left: 12 Portland doctors and composite. Lower left: 12 Horse-car drivers, Boston '88, 12 Saxons and composite, 12 Wends and composite, 12 Saxons and composite.

Composite Photographs

Fig. 36. Hawaiian, and Hawaiian Hybrids

1. Pure Hawaiian.
2. Father French, mother Hawaiian.
3. Father Portuguese, mother Hawaiian.
4. Father Chinese, mother Hawaiian.
5. Father Chinese, mother Hawaiian.
6. Father Irish, mother Hawaiian.
7. Father Filipino, mother Hawaiian
8. Father Filipino, mother Hawaiian.
9. Father American-Tahitian, mother Hawaiian.

The photographs were taken by Mrs. C. H. Gurrey of Honolulu. Exhibited by Prof. A. M. Tozzer, Harvard University.

Fig. 37. Swiss Folk Types

Exhibited by Prof. B. F. Beck, Geneva, Switzerland

Swiss Folk Types
Exhibited by
Prof. H. F. Beck
Geneva, Switzerland.

Fig. 38. Dutch Folk Types

Exhibited by Jon Von Der Spek, Den Dolder, Holland

Dutch Folk Types
Exhibited by
Joh Von Der Speek
Den Helder, Holland

FIG. 39. PEDIGREE OF JOHN BURROUGHS

Family history chart, with three portraits and a life mask, of John Burroughs. Also portraits of brothers, sisters, parents and other close relatives. At the right, two photographs of Burroughs; one of them, his last, taken a few days before his death.

By Harry H. Laughlin, Eugenics Record Office.

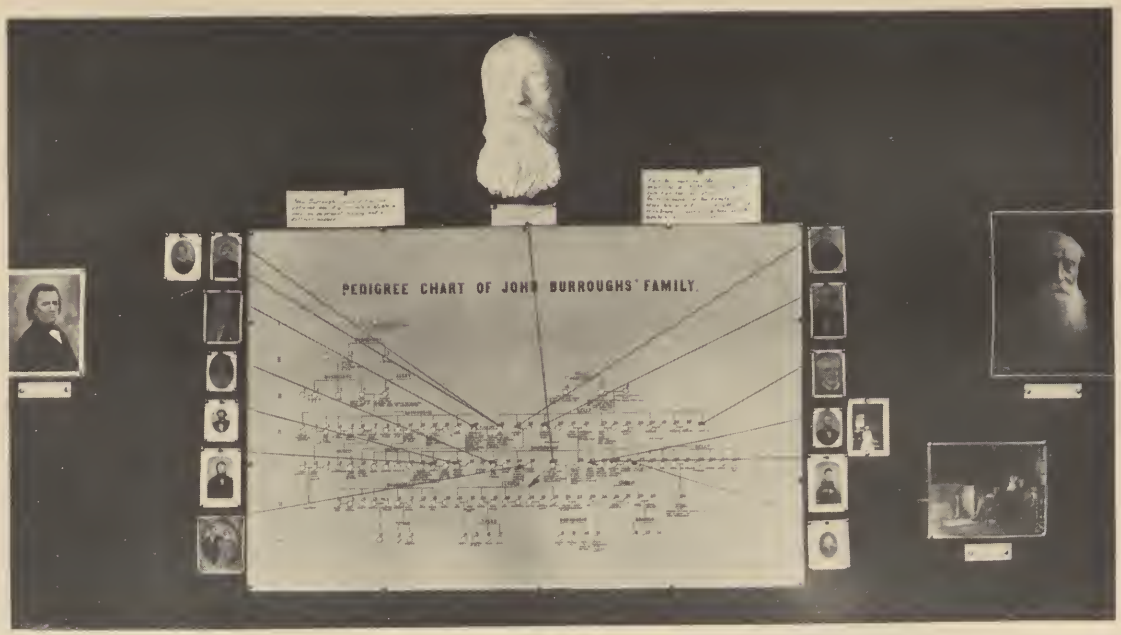
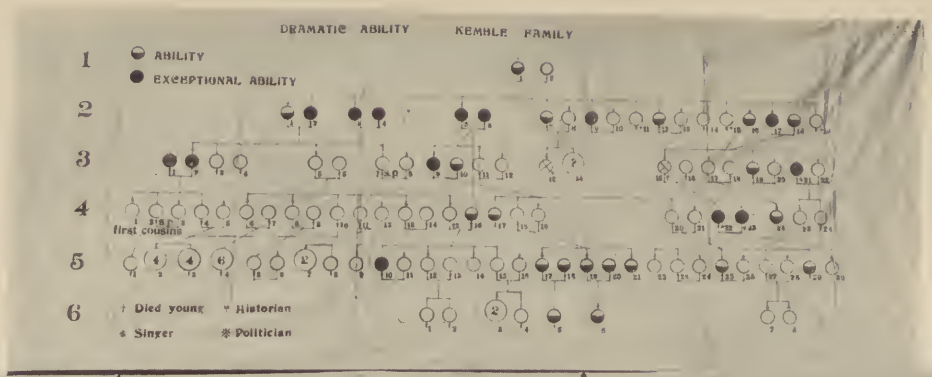

PEDIGREE CHART OF JOHN BURROUGHS' FAMILY.

FIG. 40. PEDIGREES OF DRAMATIC AND MUSICAL TALENT

(1) Dramatic ability—Kemble family. (2) Musical talent—Bach family. Prepared by the Eugenics Education Society, London, England.


DRAMATIC ABILITY KEMBLE FAMILY
ABILITY
EXCEPTIONAL ABILITY
first cousins
† Died young * Historian
* Singer * Politician

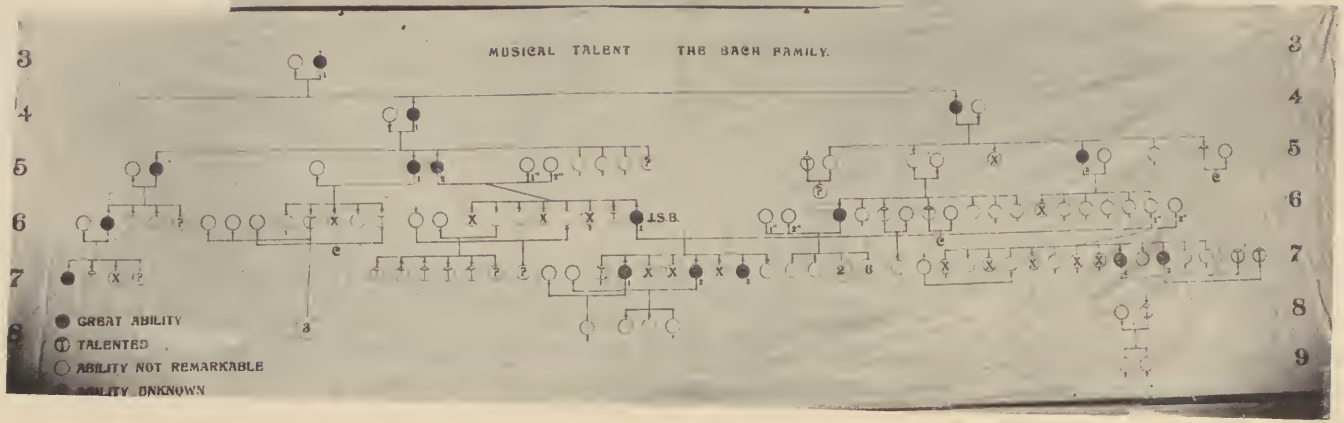

MUSICAL TALENT THE BACH FAMILY.
J.S.B.
GREAT ABILITY
TALENTED
ABILITY NOT REMARKABLE
ABILITY UNKNOWN

FIG. 41. PEDIGREE OF THE CAESARS

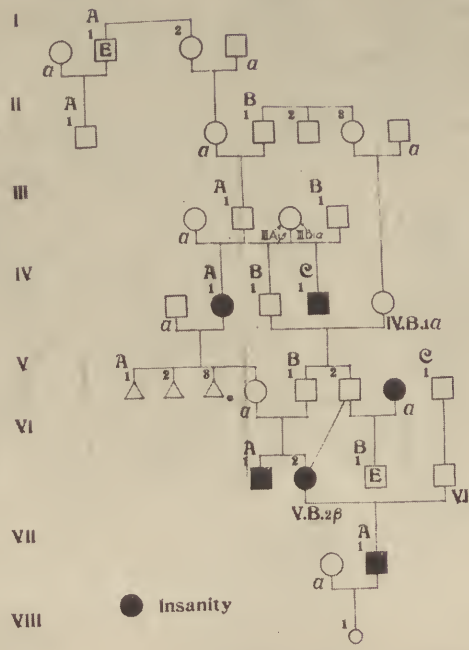
From the Exhibit of the Eugenics Education Society, London, England

PEDIGREE OF THE CAESARS.

I.A.1α Cleopatra.
I.A.1 Julius Caesar.
I.A.2 Julia.
I.A.2α Pompey.

II.A.1 Caesarion.
II.B.1α Atia.
II.B.1 Caius Octavius.
II.B.3 Octavia.
II.B.3α Marc Antony.

III.A.1α Scribonia.
III.A.1 Augustus Caesar I.
III.A.1β Livia.
III.B.1 Tiberius Claudius Nero.



IV.A.1α Agrippa.
IV.A.1 Julia.
IV.B.1 Drusius Claudius Nero.
IV.B.1α Antonia.
IV.C.1 Tiberius Claudius Caesar II.

V.B.1α Agrippina.
V.B.1 Drusus Claudius Germanicus.
V.B.2 Claudius Caesar IV.
V.B.2α Messalina l'ervert.
V.C.1 Domitius.

VI.A.1 Caligula Caesar III.
VI.A.2 Agrippina.
VI.A.2α Domitius Ahenobarbur.
VI.B.1 Britianicus.

VII.A.1α Poppea.
VII.A.1 Nero Caesar V.

Fig. 42. Marriage and Birth Rate in Relation to Immigration

Marriage, fecundity and immigration and their significance for the nation. Charts furnished by the Race Betterment Foundation.

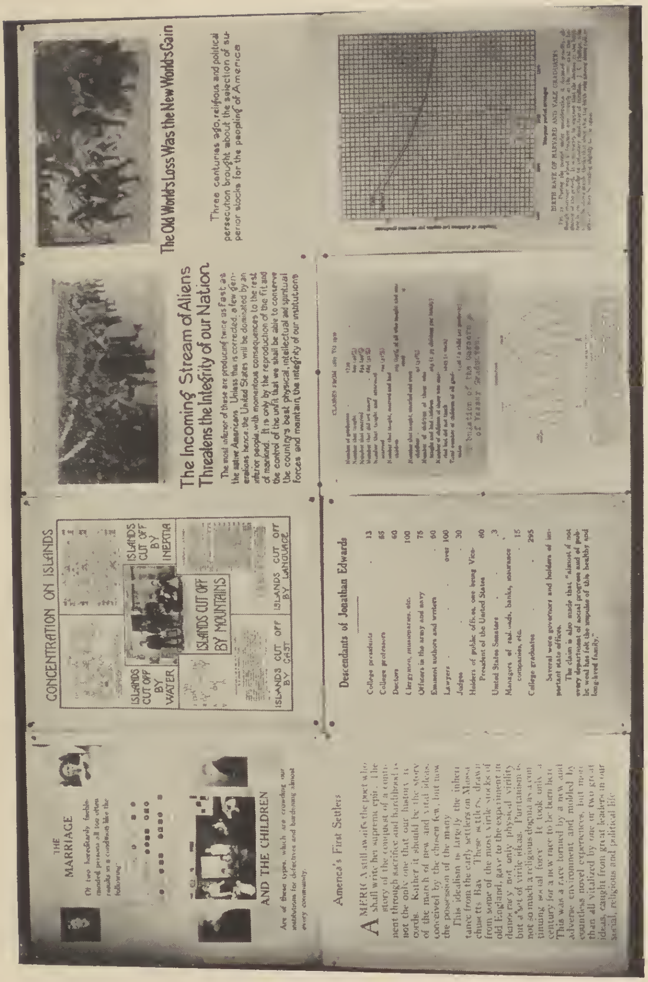

THE MARRIAGE
Of two hereditarily feeble-minded persons all too often results in a condition like the following:
AND THE CHILDREN
Are of these types, which are crowding our institutions for defectives and burdening almost every community.
CONCENTRATION ON ISLANDS
ISLANDS CUT OFF BY WATER
ISLANDS CUT OFF BY INERTIA
ISLANDS CUT OFF BY MOUNTAINS
ISLANDS CUT OFF BY CAST
ISLANDS CUT OFF BY LANGUAGE
The Incoming Stream of Aliens Threatens the Integrity of our Nation.
The most inferior of these are producing twice as fast as the native Americans. Unless this is corrected, a few generations hence the United States will be dominated by an inferior people with momentous consequences to the rest of mankind. It is only by the reproduction of the fit and the control of the unfit that we shall be able to conserve the country's best physical, intellectual and spiritual forces and maintain the integrity of our institutions
The Old World's Loss Was the New World's Gain
Three centuries ago, religious and political persecution brought about the selection of superior stocks for the peopling of America
America's First Settlers
AMERICA still awaits the poet who shall write her supreme epic. The story of the conquest of a continent through sacrifice and hardihood is not the only one that our history records. Rather it should be the story of the march of new and vital ideas, conceived by the chosen few, but now the possession of the many.
This idealism is largely the inheritance from the early settlers on Massachusetts Bay. These settlers, drawn from some of the most virile stocks of old England, gave to the experiment in democracy not only physical virility but a set of virile ideas. Puritanism is not so much a religious dogma as a continuing social force. It took only a century for a new race to be born here. This was a race formed by a new and adverse environment and molded by countless novel experiences, but more than all vitalized by one or two great ideas, caught from great leaders in our social, religious and political life.
Descendants of Jonathan Edwards
College presidents 13
College professors 65
Doctors 60
Clergymen, missionaries, etc. 100
Officers in the army and navy 75
Eminent authors and writers 60
Lawyers over 100
Judges 30
Holders of public offices, one being Vice-President of the United States 80
United States Senators 3
Managers of railroads, banks, insurance companies, etc. 15
College graduates 295
Several were governors and holders of important state offices.
The claim is also made that "almost if not every department of social progress and of public weal has felt the impulse of this healthy and long-lived family."
BIRTH RATE OF HARVARD AND YALE GRADUATES

FIG. 43. THE OLD AMERICANS AND THE TRIBE OF ISHMAEL

Upper: Physical proportions and physiological characteristics of females as compared with males, among the old Americans. Top line of figures gives the rates of female to male dimension. From Dr. A. Hrdlička, U. S. National Museum.

Lower: The tribe of Ishmael, by Dr. A. H. Estabrook.

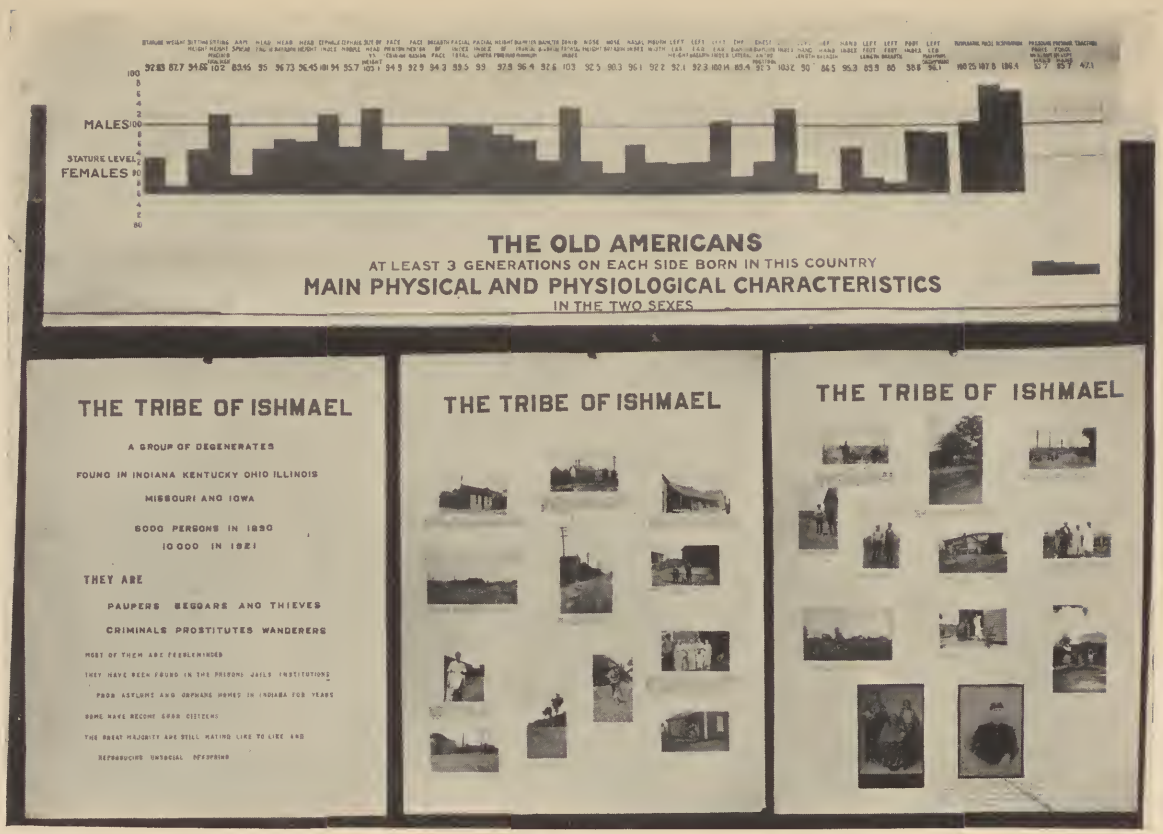

MALES
STATURE LEVEL
FEMALES
THE OLD AMERICANS
AT LEAST 3 GENERATIONS ON EACH SIDE BORN IN THIS COUNTRY
MAIN PHYSICAL AND PHYSIOLOGICAL CHARACTERISTICS
IN THE TWO SEXES
THE TRIBE OF ISHMAEL
A GROUP OF DEGENERATES
FOUND IN INDIANA KENTUCKY OHIO ILLINOIS
MISSOURI AND IOWA
6000 PERSONS IN 1850
10 000 IN 1921
THEY ARE
PAUPERS BEGGARS AND THIEVES
CRIMINALS PROSTITUTES WANDERERS
MOST OF THEM ARE FEEBLEMINDED
THEY HAVE BEEN FOUND IN THE PRISONS JAILS INSTITUTIONS
POOR ASYLUMS AND ORPHANS HOMES IN INDIANA FOR YEARS
SOME HAVE BECOME GOOD CITIZENS
THE GREAT MAJORITY ARE STILL MATING LIKE TO LIKE AND
REPRODUCING UNSOCIAL OFFSPRING
THE TRIBE OF ISHMAEL
THE TRIBE OF ISHMAEL

Fig. 44. The Jukes

The Juke charts compare the family as known to Dugdale in 1875 and again to A. H. Estabrook in 1915, forty years later. Dugdale, 1875, while inspecting the county jails of New York State, discovered this family of criminals, prostitutes and paupers, studied their family history and gathered data concerning seven hundred persons descended from "Margaret, called the Mother of Criminals." In 1915 Estabrook studied the same family of people to ascertain the changes in social and mental status which had taken place in the intervening forty years. The charts show the two sets of data, one of course inclusive of the other, comparing the family at the different periods and showing that the Jukes are still a serious burden to the coummunity. A few Jukes have risen from the mire and are now socially adequate persons. Pictures of various members of the family and their living conditions are shown. By A. H. Estabrook.

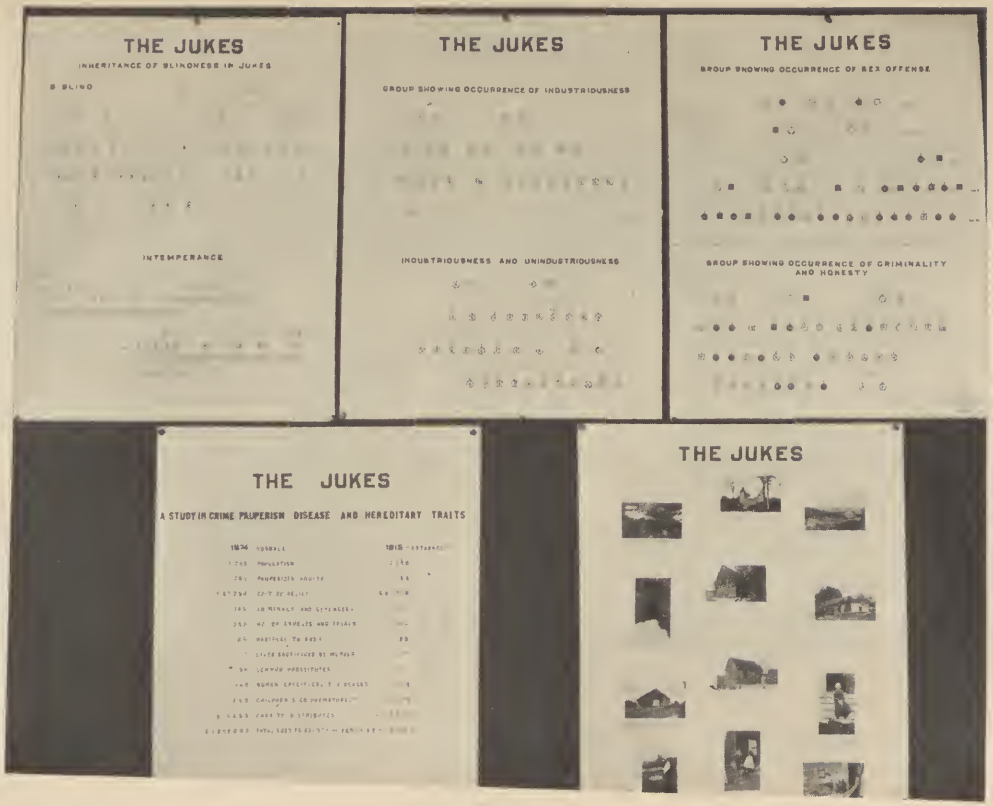

THE JUKES
INHERITANCE OF BLINDNESS IN JUKES
8 BLIND
INTEMPERANCE
THE JUKES
GROUP SHOWING OCCURRENCE OF INDUSTRIOUSNESS
INDUSTRIOUSNESS AND UNINDUSTRIOUSNESS
THE JUKES
GROUP SHOWING OCCURRENCE OF SEX OFFENSE
GROUP SHOWING OCCURRENCE OF CRIMINALITY AND HONESTY
THE JUKES
A STUDY IN CRIME PAUPERISM DISEASE AND HEREDITARY TRAITS
THE JUKES

Fig. 45. The Nams

The Nams are a set of feeble-minded folk living in the northern part of New York state. They are characterized by illegitimacy, prostitution, consanguinity and feeble-mindedness. They number about two thousand persons, practically none of whom has become socially adequate. The majority of the family is still reproducing its own kind of dysgenic folk. The charts show pictures of the folk and their homes and general habitat. A. H. Estabrook, Eugenics Record Office.

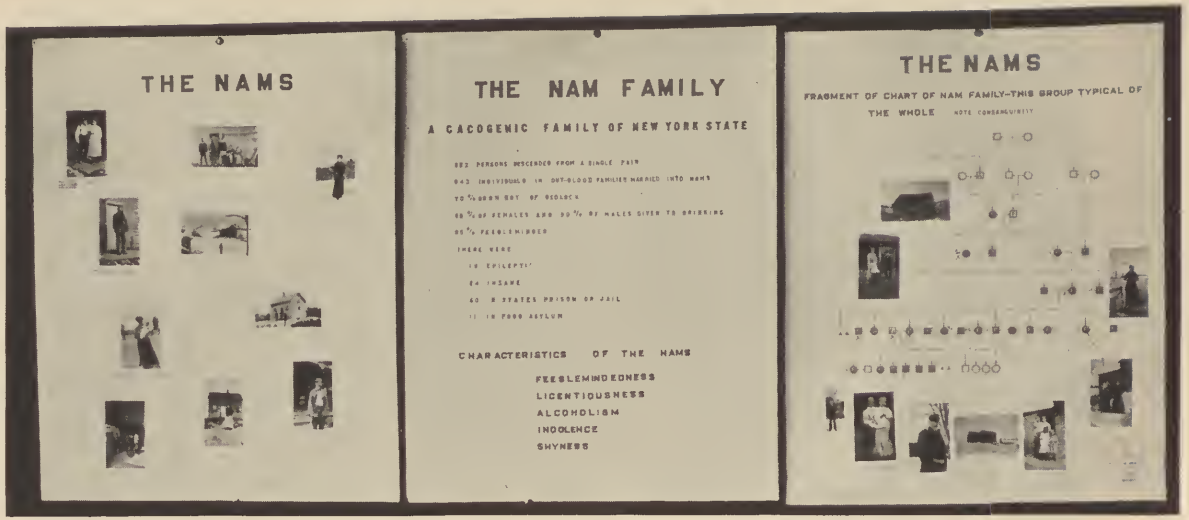

THE NAMS
THE NAM FAMILY
A CACOGENIC FAMILY OF NEW YORK STATE
CHARACTERISTICS OF THE NAMS
FEEBLEMINDEDNESS
LICENTIOUSNESS
ALCOHOLISM
INDOLENCE
SHYNESS
THE NAMS
FRAGMENT OF CHART OF NAM FAMILY—THIS GROUP TYPICAL OF THE WHOLE

FIG. 46. EUGENICAL STERILIZATION IN THE UNITED STATES

Exhibited by H. Laughlin

EUGENICAL STERILIZATION LEGISLATION
STATES HAVING EUGENICAL STERILIZATION LAWS BASED UPON PURELY EUGENICAL MOTIVES
STATES HAVING EUGENICAL STERILIZATION LAWS BASED ON EUGENICAL & THERAPEUTIC MOTIVES
STATES HAVING EUGENICAL STERILIZATION LAWS BASED PRIMARILY UPON HUNTING AND ONLY BY REFERENCE UPON EUGENICAL MOTIVES
STATES HAVING EUGENICAL STERILIZATION LAWS WHICH HAVE BEEN DECLARED UNCONSTITUTIONAL

Fig. 47. Color Inheritance in Corn

Purple stalk and leaves; kernels of various colors, also tan stalk, leaves and kernels. Seven ears of seven colors of pericarp, ranging from deep purple, crimson, pink, tan, brown, yellow and white, all with the royal purple husk, showing constant husk color with varied colored kernels.

Corn bred and exhibited by Harvey J. Sconce, Plant Breeder, Sidell, Illinois.

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